# *syngo* CT VA62A

## DICOM Conformance Statement

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**Siemens Healthcare Headquarters**
Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen
Germany
Phone: +49 9131 84-0
siemens.com/healthcare

**Legal Manufacturer**
Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen
Germany

**www.siemens.com/healthcare**

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# Introduction

## Overview

This DICOM Conformance Statement is written according to part PS 3.2 of [1].

The applications described in this conformance statement are implemented in the Siemens SOMATOM products using the Somaris/7 *syngo* CT VA62A software (internal designation: VA62A).

The Somaris/7 DICOM network implementation acts both as an SCU and an SCP for the DICOM Verification, Storage, Storage Commitment Push Model, and Query/Retrieve Services. It acts as an SCU for the DICOM Print Management Service, the Modality Worklist Service, and the Performed Procedure Step Service.

Newly introduced in this version is the support of SECURE DICOM Transfer.

These services are described in "Part I".

The DICOM Media Storage Service implementation acts as the FSC, FSU, and FSR for the specified application profiles and the related SOP Class instances. These services are described in "Part II".

Somaris/7 is based on a Siemens common medical platform. This platform is shared with other Siemens modalities in order to provide a common look and feel, as well as common interoperability features.

In this document, the different parts of the Siemens common medical platform are referred to by the terms "*syngo*®"[1], "MedCom", and "CSA".

As Somaris/7 is a *syngo*-based product, this DICOM Conformance Statement is based on the corresponding *syngo* template [2].

## Audience

This document is intended to be used by hospital staff, health system integrators, hospital IT managers, and software designers or implementors. It is assumed that the reader has a working understanding of DICOM.

1. '*syngo*' is a registered trademark of Siemens Heathcare GmbH

## Scope

This DICOM Conformance Statement refers to Siemens SOMATOM products using the Somaris/7 software. The following table relates software names to Siemens products.

Siemens SOMATOM DICOM products

| Software name | Siemens product |
|---|---|
| Somaris/7 *syngo* CT VA62A | SOMATOM Drive |
| (internal: VA62A) | SOMATOM Confidence |

# Definitions, Acronyms and Abbreviations

## Definitions

| | |
|---|---|
| DICOM | Digital Imaging and Communications in Medicine |
| DIMSE | DICOM Message Service Element |
| DIMSE-C | DICOM Message Service Element with Composite information objects |

## Acronyms and Abbreviations

| | |
|---|---|
| ACR | American College of Radiology |
| AE | DICOM Application Entity |
| AET | Application Entity Title |
| ASCII | American Standard Code for Information Interchange |
| CAD | Computer Aided Detection |
| DX | Digital Radiography |
| FSC | File Set Creator |
| FSR | File Set Reader |
| FSU | File Set Updater |
| HIS | Hospital Information System |
| IHE | Integrating the Healthcare Enterprise |
| IOD | DICOM Information Object Definition |
| ISO | International Standard Organization |
| LUT | Lookup Table |
| M | Mandatory Key Attribute |
| MPPS | Modality Performed Procedure Step |
| MWL | Modality Worklist |
| NEMA | National Electrical Manufacturers Association |
| O | Optional Key Attribute |
| R | Required Key Attribute |
| RP | Requested Procedure |
| RIS | Radiology Information System |
| RWA | Real-World Activity |

| | |
|---|---|
| PDU | DICOM Protocol Data Unit |
| SCU | DICOM Service Class User (DICOM client) |
| SCP | DICOM Service Class Provider (DICOM server) |
| SOP | DICOM Service-Object Pair |
| SPS | Scheduled Procedure Step |
| SR | Structured Report |
| TLS | Transport Layer Security |
| U | Unique Key Attribute |
| UID | Unique Identifier |
| UTF-8 | Unicode Transformation Format-8 |
| VOI | Value of Interest |
| VR | Value Representation |

## References

[1] DICOM® Standards Publication Part(s) 3, 4, ©NEMA
Standard is under continous maintenance, the current official version is available at: http://dicom.nema.org

[2] *syngo* VY25A DICOM Conformance Statement

## Connectivity and Interoperability

The implementation of the Somaris/7 DICOM interface has been carefully tested to ensure correspondence with this Conformance Statement. However, the Conformance Statement and the DICOM standard do not guarantee interoperability of Siemens modalities and modalities of other vendors. The user must compare the relevant Conformance Statements and, if a successful interconnection is in theory possible, the user is responsible for specifying an appropriate test suite and for validating the interoperability, which is required. A network environment may need additional functions beyond the scope of DICOM.

# Part I - Network

# *Implementation Models*

# Implementation Models

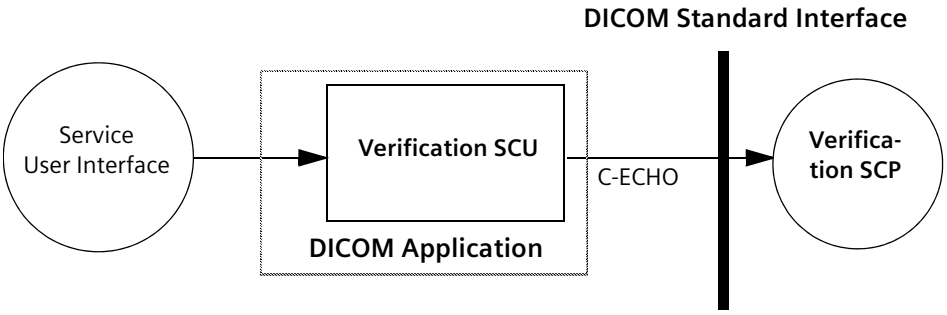
## Verification

The Verification service class defines an application-level class of service which allows the operator to verify the ability of an application on a remote node, in order to respond to DICOM messages. The DICOM Service Tool application supports the Verification service in acting as an SCU.

The other direction - responding to Verification requests from remote applications - is handled by the Storage SCP application.

### Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as the SCU for the C-ECHO DICOM network service. The product target operating system is Windows 7.




### Functional Definitions of Application

The DICOM Service Tool application opens an association when a "verification" of a remote application is requested during a configuration session. This can be done when entering new data for remote application configuration or to verify existing configuration data.

### Sequencing of Real-World Activities

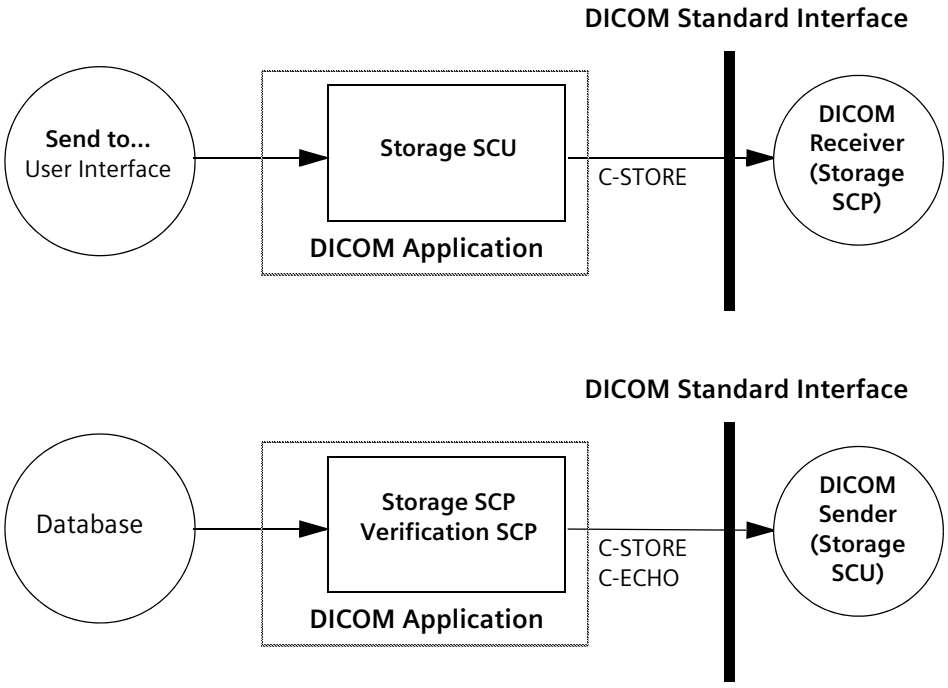
Newly configured data of a remote AE has to be first saved before a "verification" of this data is possible.

## Storage

The Somaris/7 DICOM Application Entity both originates associations for the Storage of DICOM Composite Information Objects in Remote Application Entities and accepts association requests for Storage from Remote Application Entities.

## Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as both an SCU and an SCP for the C-STORE DICOM network service, and as the SCP for the C-ECHO DICOM network service. The product target operating system is Windows 7.




## Functional Definitions of Application Entities

The Storage SCU is invoked by the job control interface that is responsible for processing network archiving tasks. The job consists of data describing the composite image objects selected for storage and the destination. An association is negotiated with the destination application entity and the image data is transferred using the C-STORE DIMSE service. The status of the transfer is reported to the job control interface.

The Storage SCP component of the Siemens Somaris/7 DICOM application operates as a background server process. It already exists when the machine is powered on and waits for Storage association requests. Upon accepting an association

with a negotiated Presentation Context, it starts to receive the Composite Image Objects and imports them into the local database. Verification requests will also be processed and responded to by the Storage SCP component.

## Sequencing of Real-World Activities

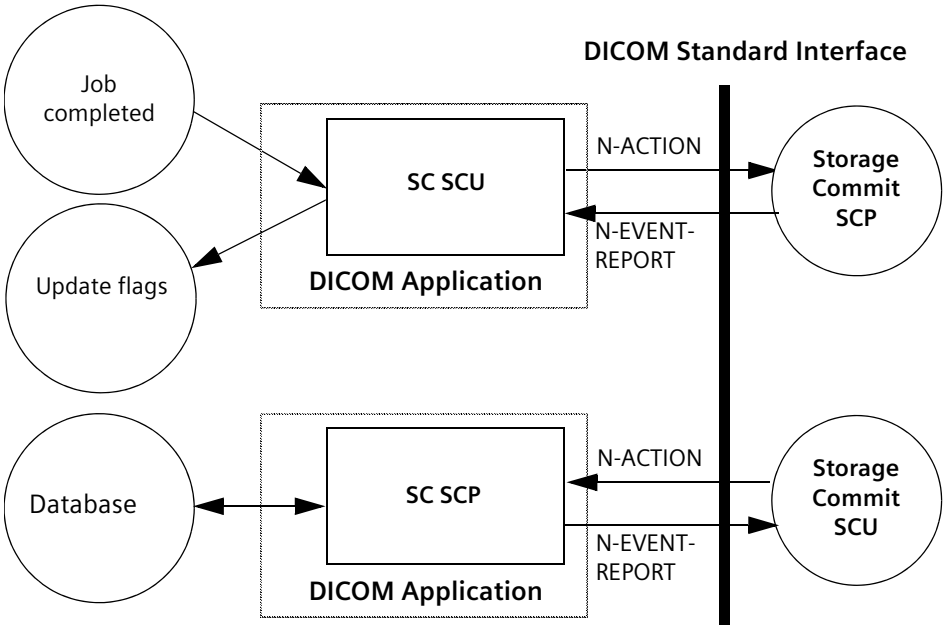
Not applicable.

## Storage Commitment

The Storage Commitment service class defines an application-level class of service which facilitates the commitment to storage. It performs an additional task for the commitment of composite objects apart from the network-based storage of images as defined by the Storage Service class. The Somaris/7 DICOM implementation supports the Storage Commitment Push Model both as an SCU and as an SCP.

### Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as the SCU for the Storage Commitment Push Model Service using the Storage Commitment Service Class. The product target operating system is Windows 7.



### Functional Definitions of Application Entities

With each successfully completed send job, the Somaris/7 DICOM application creates a Storage Commitment Push Model Identifier from the SOP Instances sent. Then, a Storage Commit Request is triggered. Depending on the configuration, the Somaris/7 DICOM application keeps the association open for responses with a configurable time-out, or closes the association and expects responses on a different association that has to be established by the remote Storage Commitment SCP.

The commitment status derived from the related trigger response is indicated by the Status Flags of the related entrity. It is possible to create triggers ("auto rules") from this event.

The Transaction UIDs of the pending commitment request are kept "open" for a configurable amount of time (default: 1h). If the "open time" for a pending commitment request has elapsed without a related response from the provider, the Transaction UID is removed and the related entities are indicated as "commit failed".

In any case, a commitment will only be requested for previously and successfully sent images.

## Sequencing of real-world activities

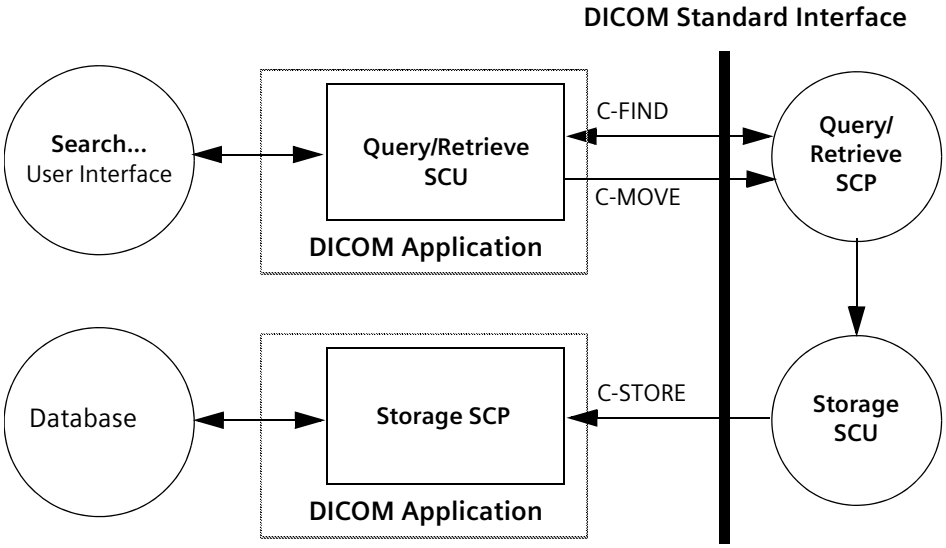
The Storage Commitment trigger is automatically derived from the successful completion of a Send Job.

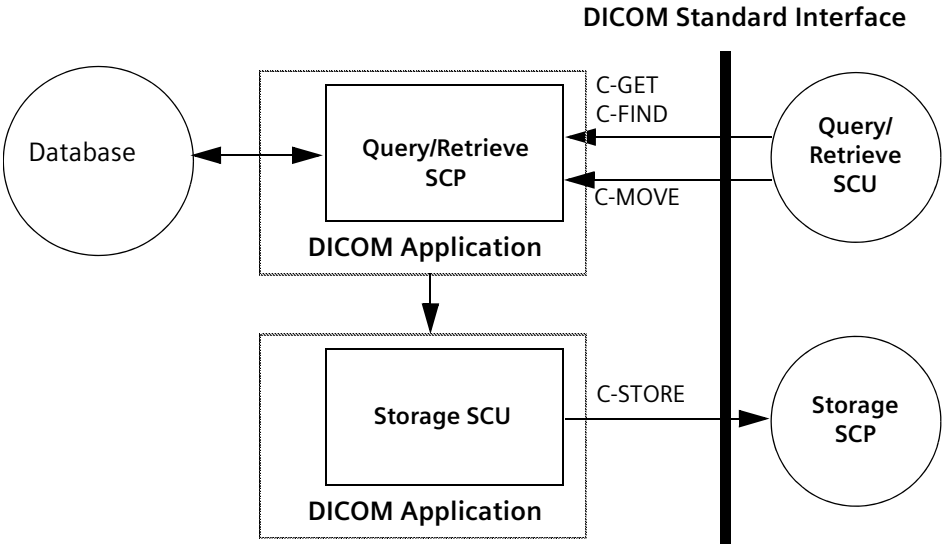
## Query/Retrieve

The Query/Retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined DICOM information model. It allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The DICOM Query/Retrieve application supports the Query/Retrieve services to act as both an SCU and an SCP.

## Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as both the SCU and an SCP for the Query/Retrieve network service. The product target operating system is Windows 7.






## Functional Definitions of Application Entities

The Query/Retrieve SCU requests the remote Query/Retrieve SCP to perform a search and match to the keys specified in the request, in order to display the results in the user interface. Depending on the user action (Import), the Somaris/7 DICOM SCU sends a C-MOVE DIMSE service to initiate a C-STORE sub-operation on the SCP and to start an image transfer from the remote Storage SCU to the Somaris/7 DICOM Storage SCP.

The Query/Retrieve SCP responds to C-FIND DIMSE services from remote SCU applications. Depending on further remote requests, a C-GET or a C-MOVE involves the Somaris/7 DICOM Query/Retrieve SCP application initiating a C-STORE association (by triggering and parameterizing its own Storage SCU) to send image objects to a remote Storage SCP.

All components of the Somaris/7 DICOM Query/Retrieve SCP application operate as background server processes. They already exist when the machine is powered on and respond to queries based on the records stored in its database.

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! The Somaris/7 DICOM Query/Retrieve SCU application executes new queries based on the data found in the higher-level query. For details, see *SOP-Specific Conformance Statement - Find SCU* →A2-51.

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## Sequencing of Real-World Activities

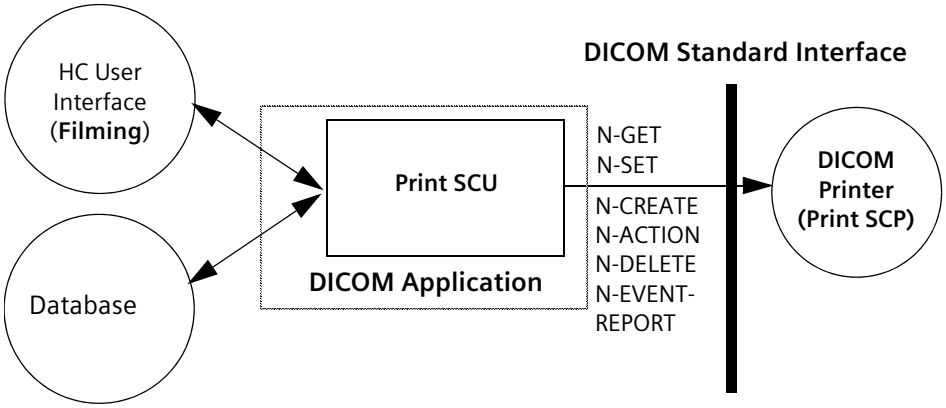
The retrieval of images is only possible if results from a previous "Search..." operation exist and these entities can be selected for "Import".

## Print

The Print Management Service Classes define an application-level class of services which facilitates the printing of images on a hardcopy medium. The print management SCU and print management SCP are peer DICOM print management application entities. The DICOM print application supports the print management DIMSE services to act as an SCU.

## Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as the SCU for the print management network service. The product target operating system is Windows 7.




## Functional Definitions of Application Entities

The Print SCU is invoked by the user interface to set up a film sheet layout and whenever an image is ready to be printed on film. The print SCU holds and maintains all the data needed to compile a complete film sheet from the data (images, layout, configuration) received. Whenever a film sheet is ready to print, the related data is used to supply the information to the SOP Classes of the Print Management Service Class. A queue is maintained in order to intermediately store several film sheets in case of resource problems on the printer. The SCU only supplies and requires the mandatory SOP Classes of the Print Management Service Class.

## Sequencing of Real-World Activities

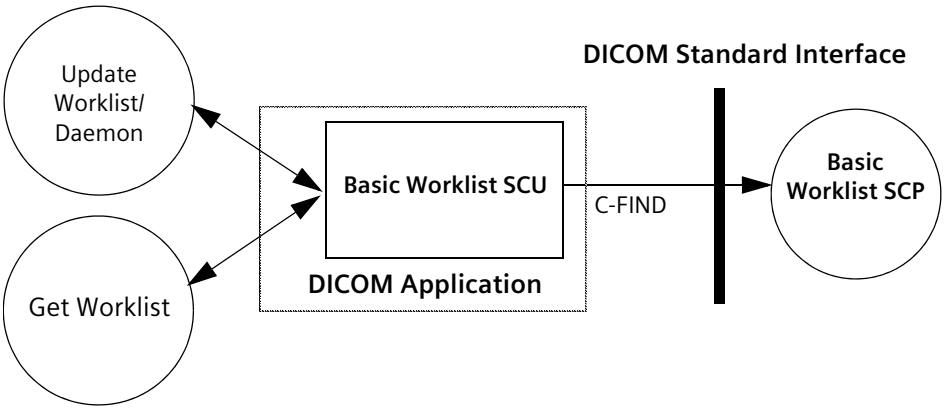
Not applicable.

## Model Worklist

The Basic Worklist Service Class defines an application-level class of service, which facilitates the transfer of worklists from the information system to the imaging modality. The worklist is queried by the AE and supplies the SCU with the scheduled tasks that have to be performed on the modality. The DICOM worklist application supports the worklist service as an SCU.

## Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as the SCU for the Basic Worklist Service using the Modality Worklist SOP Class. The product target Operating System is Windows 7.




**Note:** Worklist updates can be configured to be received either automatically (in a configurable time interval) or manually (initiated by the user). Users can either initiate a broad worklist query (all jobs for their own modality or application entity) or a patient-based worklist query (where more search keys can be given, including Patient Name and Patient ID).

### Functional Definitions of Application Entities

The worklist SCU ("broad query") is invoked from the patient browser user interface or by timer to request the worklist from a remote Information System (Modality Worklist SCP). This is done to match against the internal worklist query keys specified in the C-FIND DIMSE service issued for the Modality Worklist Model.

The Worklist SCP responds to the C-FIND query and scheduled imaging service requests (scheduled procedure steps). Patient demographic information is downloaded from the information system to the Somaris/7 modality. All information retrieved is held in the scheduling database for use during the patient registration procedure.

Furthermore, the patient-based query dialog from the patient browser allows you to enter specific matching criteria ("narrow query") for the issue worklist query. The Patient Registration dialog can be populated with the response data according to availability in the worklist response identifier.

## Sequencing of Real-World Activities

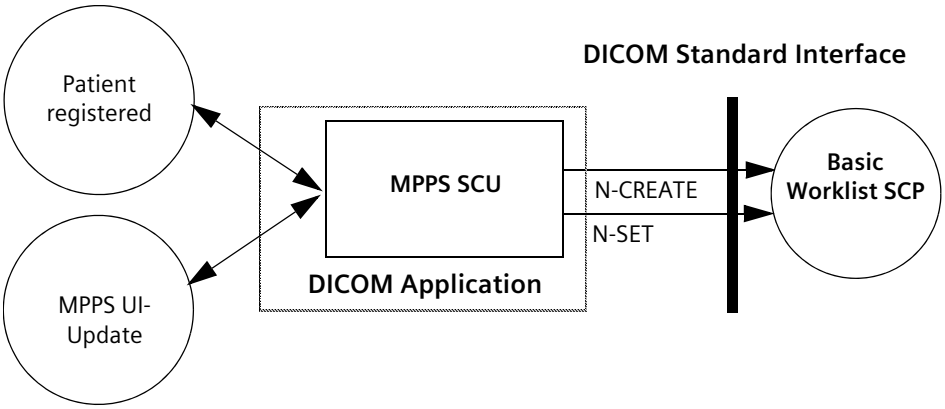
The "narrow" (patient-based) Worklist Query requires that sufficient matching keys or a unique matching key are/is entered before the query is issued. Only then can a single response be expected to complete the registration dialog.

## Modality Performed Procedure Step

The Modality Performed Procedure Step (MPPS) service class defines an application-level class of service which facilitates the transfer of billing and radiation dose information from the imaging modality to the information system. The performed procedure step is created and set by the AE and supplies the SCP with the information about a real-world procedure that is performed on the modality. The DICOM Modality Performed Procedure Step application supports the MPPS service as an SCU.

## Application Data Flow Diagram

The Somaris/7 DICOM network implementation acts as the SCU for the performed procedure step network service. The target operating system is Windows 7.



### Functional Definitions of Application Entities

When a patient is registered (for example, via a Scheduled Procedure Step from the Worklist), the Somaris/7 DICOM application creates an MPPS instance and communicates it to the MPPS SCP.

Furthermore, a manual update can be performed using the Somaris/7 MPPS user interface. It is only possible to set the state of the MPPS to "Completed" or "Discontinued" there. If this is done, the DICOM application will no longer allow updates on the related MPPS instance.

Multiple requested procedures scheduled for a CT examination will result in multiple studies and MPPS, where each RP is related to one study.

Somaris/7 supports the creation of "unscheduled cases" by allowing MPPS instances to be communicated for locally registered patients.

## Sequencing of real World Activities

Not applicable.

# AE Specifications

## Verification AE Specification

### Association Establishment Policies

#### General

The Somaris/7 DICOM Service Tool application attempts to open an association for verification request whenever the "verification" function is activated during the network configuration of a remote DICOM application.

#### Number of Associations

The Somaris/7 DICOM Service Tool application initiates one association at a time to request verification.

#### Asynchronous Nature

The Somaris/7 DICOM Service Tool application does not support asynchronous communication (multiple outstanding transactions over a single association).

#### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

### Association Initiation by Real-World Activity

The Somaris/7 DICOM Service Tool application attempts to initiate a new association for

- DIMSE C-ECHO

service operations.

#### Associated Real-World Activity - Verification

##### Associated Real-World Activity - Verification SCU

The associated Real-World activity is a C-ECHO request initiated by the Service and Configuration SW environment whenever a "verification" is requested. If an association with a remote Application Entity is successfully established, Verification

with the configured AET is requested via the open association. If the C-ECHO Response from the remote Application contains a status other than "Success", this will be indicated in the service environment and the association is closed.

#### *Proposed Presentation Contexts - Verification SCU*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Initiation presentation context Verification

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |

#### *SOP-Specific Conformance Statement - Verification SCU*

The Application conforms to the definition of a Verification SCU in accordance with the DICOM Standard.

## *Association Acceptance Policy*

The Verification SCP is part of the Storage SCP - see *Association Acceptance Policy* →A2-20.

## Storage AE Specification

The Somaris/7 Storage service class user applications and service class provider applications use one AE when initiating/receiving associations to/from remote DICOM nodes.

The SIEMENS Somaris/7 DICOM implementation provides Standard Conformance to the following DICOM V3.0 SOP Classes as both an SCU and an SCP:

Standard SOP Classes as a Storage SCU and an SCP

| SOP Class Name | SOP Class UID |
|---|---|
| **C**omputed **R**adiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 |
| **C**omputed **T**omography Image Storage | 1.2.840.10008.5.1.4.1.1.2 |
| **E**nhanced **C**omputed **T**omography Image Storage | 1.2.840.10008.5.1.4.1.1.2.1 |
| **D**igital **X**-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 |
| **D**igital **X**-Ray Image Storage - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 |
| Digital **M**ammo**G**raphy Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 |
| Digital **M**ammo**G**raphy Image Storage - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 |
| Digital **I**ntra-**o**ral **X**-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 |
| Digital **I**ntra-**o**ral **X**-Ray Image Storage - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 |
| **M**agnetic **R**esonance Image Storage | 1.2.840.10008.5.1.4.1.1.4 |
| **E**nhanced **M**agnetic **R**esonance Image Storage | 1.2.840.10008.5.1.4.1.1.4.1 |
| **M**agnetic **R**esonance Spectroscopy  Image Storage | 1.2.840.10008.5.1.4.1.1.4.2 |
| Enhanced Magnetic Resonance Colored Storage | 1.2.840.10008.5.1.4.1.1.4.3 |
| **G**rayscale **S**oftcopy **P**resentation **S**tate **S**torage | 1.2.840.10008.5.1.4.1.1.11.1 |
| X-Ray 3D Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.1 |
| **B**reast **T**omosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.3 |
| **N**uclear **M**edicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 |
| **PET** Image Storage | 1.2.840.10008.5.1.4.1.1.128 |
| **R**adio **T**herapy **Image** Storage | 1.2.840.10008.5.1.4.1.1.481.1 |
| **R**adio **T**herapy **Dose** Storage | 1.2.840.10008.5.1.4.1.1.481.2 |
| **R**adio **T**herapy **Structure Set** Storage | 1.2.840.10008.5.1.4.1.1.481.3 |
| **R**adio **T**herapy **P**lan Storage | 1.2.840.10008.5.1.4.1.1.481.5 |
| **R**adio **T**herapy Ion **Plan** Storage | 1.2.840.10008.5.1.4.1.1.481.8 |
| **R**adio **T**herapy Ion **Beams Treatment Record** Storage | 1.2.840.10008.5.1.4.1.1.481.9 |
| **R**adio **T**herapy **Brachy Treatment Record** Storage | 1.2.840.10008.5.1.4.1.1.481.6 |
| **R**adio **T**herapy Ion **Treatment Summary Record** Storage | 1.2.840.10008.5.1.4.1.1.481.7 |

Standard SOP Classes as a Storage SCU and an SCP

| SOP Class Name | SOP Class UID |
|---|---|
| **S**econdary **C**apture Image Storage | 1.2.840.10008.5.1.4.1.1.7 |
| **M**ulti-frame Single Bit **S**econdary **C**apture Image Storage | 1.2.840.10008.5.1.4.1.1.7.1 |
| **M**ulti-frame Grayscale Byte **S**econdary **C**apture Image Storage | 1.2.840.10008.5.1.4.1.1.7.2 |
| **M**ulti-frame Grayscale Word **S**econdary **C**apture Image Storage | 1.2.840.10008.5.1.4.1.1.7.3 |
| **M**ulti-frame True Color **S**econdary **C**apture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 |
| **U**ltra**S**ound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 |
| **U**ltra**S**ound Multi-Frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 |
| **X**-Ray **A**ngiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 |
| **X**-Ray **R**adio**F**luoroscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 |
| **12-lead ECG** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.1 |
| **Ambulatory ECG** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.3 |
| **Basic Voice Audio** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.1 |
| **Cardiac Electrophysiology** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.3.1 |
| **General ECG** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 |
| **Hemodynamic** Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.2.1 |
| **Raw** Data Storage | 1.2.840.10008.5.1.4.1.1.66 |
| **Spatial** Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 |
| **Spatial** Fiducial Storage | 1.2.840.10008.5.1.4.1.1.66.2 |
| Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.4 |
| Surface Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.5 |
| **Basic Text** SR | 1.2.840.10008.5.1.4.1.1.88.11 |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 |
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 |
| Encapsulated PDF | 1.2.840.10008.5.1.4.1.1.104.1 |
| Verification (only SCP) | 1.2.840.10008.1.1 |

The SIEMENS Somaris/7 DICOM implementation provides Private Conformance to the following DICOM V3.0-conform Private SOP Classes as both an SCU and an SCP:

Private SOP Classes as a Storage SCU and an SCP

| SOP Class Name | SOP Class UID |
|---|---|
| CSA Non-Image Storage | 1.3.12.2.1107.5.9.1 |

## Association Establishment Policies

### General

The existence of a job queue with a network destination, or an internal trigger after processing a retrieve request, activates the DICOM Storage Application. An association request is sent to the destination AE and, upon successful negotiation of a Presentation Context, the transfer starts.

The default PDU size is of 32 kB.

### Number of Associations

The Somaris/7 DICOM application initiates several associations at the same time, one for each destination to which a transfer request is being processed in the active job queue list.

The Somaris/7 DICOM application is able to accept multiple associations at the same time. It can handle up to 10 associations in parallel.

The number of Simultaneous DICOM associations can be configured via the Service UI. The dialog can be found via Configuration / DICOM / General.

### Asynchronous Nature

The Somaris/7 DICOM application does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

### Association Initiation Policy

If a job with a network destination becomes active in the job list, or a retrieve sub-operation is processed, the Somaris/7 DICOM application attempts to initiate a new association for

- DIMSE C-STORE

service operations.

### Associated Real-World Activity - Send (Storage SCU)

#### Associated Real-World Activity - Send Image Objects to a Network Destination

The associated Real-World activity is a C-STORE request initiated by an internal daemon process. This is triggered by a job with a network destination or by the processing of an external C-MOVE retrieve request. If the process successfully establishes an association to a remote Application Entity, it transfers each image one after another via the open association. If the C-STORE Response from the remote Application contains a status other than "Success" or "Warning", the association is aborted.

*Proposed Presentation Contexts - Send Images (Storage SCU)*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Initiation presentation context Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **C**omputed **R**adiography Image | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **C**omputed **T**omography Image | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **E**nhanced **C**omputed **T**omography Image | 1.2.840.10008.5.1.4.1.1.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **D**igital **X**-Ray Image for presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **D**igital **X**-Ray Image for processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **M**ammo**G**raphy Image for presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **M**ammo**G**raphy Image for processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| Digital **I**ntra-**o**ral **X**-Ray Image for presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| Digital **I**ntra-**o**ral **X**-Ray Image for processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **M**agnetic **R**esonance Image | 1.2.840.10008.5.1.4.1.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **E**nhanced **M**agnetic **R**esonance Image | 1.2.840.10008.5.1.4.1.1.4.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **M**agnetic **R**esonance Spectroscopy Storage | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.1 |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2.2 |
| Enhanced Magnetic Resonance Colored Storage | 1.2.840.10008.5.1.4.1.1.4.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **G**rayscale **S**oftcopy **P**resentation **S**tate Storage | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.1 |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2.2 |
| **X-Ray** 3D Angiographi**c** **I**mage **S**torage | 1.2.840.10008.5.1.4.1.1.13.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **B**reast **T**omosynthesis **I**mage **S**torage | 1.2.840.10008.5.1.4.1.1.13.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **N**uclear **M**edicine Image | 1.2.840.10008.5.1.4.1.1.20 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **PET** Image | 1.2.840.10008.5.1.4.1.1.128 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **RT** Image | 1.2.840.10008.5.1.4.1.1.481.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **RT Dose** | 1.2.840.10008.5.1.4.1.1.481.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **RT Structure Set** | 1.2.840.10008.5.1.4.1.1.481.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **RT Beams Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Plan** | 1.2.840.10008.5.1.4.1.1.481.5 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Brachy Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.6 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Treatment Summary Record** | 1.2.840.10008.5.1.4.1.1.481.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Ion Plan** | 1.2.840.10008.5.1.4.1.1.481.8 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Ion Beams Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.9 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Multi-frame Single Bit **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| Multi-frame Grayscale Byte **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| Multi-frame Grayscale Word **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Multi-frame True Color **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **U**ltra**S**ound Multi-Frame Image | 1.2.840.10008.5.1.4.1.1.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **U**ltra**S**ound Image | 1.2.840.10008.5.1.4.1.1.6.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **X**-Ray **A**ngio-graphic Image | 1.2.840.10008.5.1.4.1.1.12.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **X**-Ray **R**adio-**F**luoroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| **W**aveform | 1.2.840.10008.5.1.4.1.1.9.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| **W**aveform 12-lead ECG Object | 1.2.840.10008.5.1.4.1.1.9.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Waveform General ECG Object | 1.2.840.10008.5.1.4.1.1.9.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Waveform Ambulatory ECG Object | 1.2.840.10008.5.1.4.1.1.9.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Waveform Hemodynamic Object | 1.2.840.10008.5.1.4.1.1.9.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Waveform Cardiac Electrophysiology Object | 1.2.840.10008.5.1.4.1.1.9.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Waveform Basic Audio Object | 1.2.840.10008.5.1.4.1.1.9.4.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Raw Data Storage Object | 1.2.840.10008.5.1.4.1.1.66 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| **S**patial **R**egistration **O**bject | 1.2.840.10008.5.1.4.1.1.66.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| **S**patial **F**iducials **O**bject | 1.2.840.10008.5.1.4.1.1.66.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| **S**egmentation Storage | 1.2.840.10008.5.1.4.1.1.66.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1)[a] | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4)[a] | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **S**urface **S**egmentation Storage | 1.2.840.10008.5.1.4.1.1.66.5 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Basic Text SR | 1.2.840.10008.5.1.4.1.1.88.11 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Initiation presentation context Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Encapsulated PDF | 1.2.840.10008.5.1.4.1.1.104.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| CSA Non-Image | 1.3.12.2.1107.5.9.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

[a.] The Transfer Syntax used is strongly influenced by the accepted Transfer Syntax at the time when the instance was received. For example, instances received with JPEG Lossy Transfer Syntaxes are not converted and can only be sent out with the same Transfer Syntax.

1. The proposed Transfer Syntax is highly restricted for images stored internally in a lossy compression format. For example, instances received with JPEG Lossy Transfer Syntaxes are not converted and can only be sent out with the same Transfer Syntax.

2. The compression is only supported for images with pixel representation (0028, 0103) equal to 0 (=unsigned).

The "MOVE" destinations must be configured as Storage destinations. This includes the configuration of Transfer Syntax capabilities.

Not all the listed transfer syntaxes are proposed every time. For some abstract syntaxes, only a list of uncompressed (UC) transfer syntaxes (one or more) is proposed, while for other abstract syntaxes, the JPEG Loss-Less (LL) syntax and/or a list of JPEG Lossy (LY) transfer syntaxes are also proposed. The contents of this lists are configurable, for example, UC could be configured to contain only Implicit Little Endian. For further configuration details, see *Storage, Storage Commitment and Query/Retrieve* →A5-3.

It is not possible to send an image that is locally stored in a lossy compressed format using an uncompressed or lossless transfer syntax.

Depending on the real-world activity initiating the C-STORE, the following behavior is observed:

- If the C-STORE is initiated by a user, a configuration parameter called Quality-Factor(Q) is used to decide which transfer syntax lists will be proposed. Q can take values between 0 and 100. If Q = 0, only UC is proposed. If Q = 100, UC and LL are proposed. Otherwise, UC and LY are proposed.
- If the C-STORE is initiated by the C-MOVE SCP, another configuration parameter called Compression Types Supported (CTS) is used to decide which transfer syntaxes are proposed. CTS can take integer values. If CTS = 0 or CTS > 3, UC is proposed. If CTS = 1, UC and LY are proposed. If CTS = 2, UC and LL are proposed. If CTS >= 3, UC, LL and LY are proposed.

The JPEG lossy and JPEG lossless compression types are parameters that are part of the Application Entity Properties configuration (storage checked). The configuration can by reached via the Service UI: Configuration / DICOM / Network nodes.

#### *SOP-Specific Conformance Statement - Storage SCU*

The DICOM images created by the Somaris/7 DICOM application conform to the DICOM IOD definitions (Standard Extended IODs). However, they also contain additional private elements that have to be discarded by a DICOM system when modifying the image.

The DICOM nodes are responsible for data consistency when modifying images. All unknown private attributes have to be removed after modification.

Somaris/7 does not change private attributes if no modification is done. However, during a *Save as* operation, all non-*syngo* defined private attributes are removed. For association and DIMSE level time-outs, refer to *Configurable Parameters* →A5-2.

## *Association Acceptance Policy*

The Somaris/7 DICOM application attempts to accept a new association for

- DIMSE C-ECHO
- DIMSE C-STORE

service operations. Any Information Object transmitted on this association is checked for conformance and stored in the database if the check is successful.

### *Real-World Activity - Receive (Storage SCP)*

#### *Associated Real-World Activity - Receiving Images from a Remote Node (Storage SCP)*

The daemon receiving process accepts an association and receives any images transmitted on this association. It stores the images on disk in its own database if the conformance check is successful.

### *Proposed Presentation Contexts - Receiving Images (Storage SCP)*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **C**omputed **R**adiography Image | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **C**omputed **T**omography Image | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **E**nhanced **C**omputed **T**omography Image | 1.2.840.10008.5.1.4.1.1.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **D**igital **X**-Ray Image for presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **D**igital **X**-Ray Image for processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| Digital **M**am-mo**G**raphy X-Ray Image for presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Digital **M**am-mo**G**raphy X-Ray Image for processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| Digital **I**ntra-**o**ral **X**-Ray Image for presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Digital **I**ntra-**o**ral **X**-Ray Image for processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **M**agnetic **R**eso-nance Image | 1.2.840.10008.5.1.4.1.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **E**nhanced **M**agnetic **R**esonance Image | 1.2.840.10008.5.1.4.1.1.4.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **M**agnetic **R**esonance Spectroscopy Storage | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.1 |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2.2 |
| **E**nhanced **M**agnetic **R**esonance Colored Storage | 1.2.840.10008.5.1.4.1.1.4.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **G**rayscale **S**oft-copy **P**resentation **S**tate Storage | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.1 |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2.2 |
| **X-Ray** 3D **A**ngiographic Image | 1.2.840.10008.5.1.4.1.1.13.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **B**reast **T**omosynthesis **I**mage **S**torage | 1.2.840.10008.5.1.4.1.1.13.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **N**uclear **M**edi-cine Image | 1.2.840.10008.5.1.4.1.1.20 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **PET** Image | 1.2.840.10008.5.1.4.1.1.128 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **RT Structure Set** | 1.2.840.10008.5.1.4.1.1.481.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **RT Dose** | 1.2.840.10008.5.1.4.1.1.481.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **RT** Image | 1.2.840.10008.5.1.4.1.1.481.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **RT Plan** | 1.2.840.10008.5.1.4.1.1.481.5 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **RT Beams Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Brachy Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.6 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Treatment Summary Record** | 1.2.840.10008.5.1.4.1.1.481.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Ion Plan** | 1.2.840.10008.5.1.4.1.1.481.8 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **RT Ion Beams Treatment Record** | 1.2.840.10008.5.1.4.1.1.481.9 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Multi-frame Single Bit **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| Multi-frame Grayscale Byte **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Multi-frame Grayscale Word **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| Multi-frame True Color **S**econdary **C**apture Image | 1.2.840.10008.5.1.4.1.1.7.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **U**ltra**S**ound Multi-Frame Image | 1.2.840.10008.5.1.4.1.1.3.1<br>1.2.840.10008.5.1.4.1.1.3 (retired) ***1** | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **U**ltra**S**ound Image | 1.2.840.10008.5.1.4.1.1.6.1<br>1.2.840.10008.5.1.4.1.1.6 (retired) ***1** | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |

Acceptable presentation contexts Storage

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **X**-Ray **A**ngio-graphic Image | 1.2.840.10008.5.1.4.1.1.12.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **X**-Ray **R**adio**F**luo-roscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| **W**aveform | 1.2.840.10008.5.1.4.1.1.9.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Waveform General ECG Object | 1.2.840.10008.5.1.4.1.1.9.1.2 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| Waveform Ambulatory ECG Object | 1.2.840.10008.5.1.4.1.1.9.1.3 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| Waveform Hemodynamic Object | 1.2.840.10008.5.1.4.1.1.9.2.1 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| Waveform Cardiac Electrophysiology Object | 1.2.840.10008.5.1.4.1.1.9.3.1 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| Waveform Basic Audio Object | 1.2.840.10008.5.1.4.1.1.9.4.1 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| **R**aw **D**ata Storage Object | 1.2.840.10008.5.1.4.1.1.66 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| **S**patial **R**egistration **O**bject | 1.2.840.10008.5.1.4.1.1.66.1 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |
| **S**patial **F**iducials **O**bject | 1.2.840.10008.5.1.4.1.1.66.2 | Implicit VR Little Endian<br>Explicit VR Big Endian<br>Explicit VR Little Endian | 1.2.840.10008.1.2<br>1.2.840.10008.1.2.2<br>1.2.840.10008.1.2.1 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| **S**egmentation Storage | 1.2.840.10008.5.1.4.1.1.66.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| | | JPEG Lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| | | JPEG Lossy Extended (2 & 4) | 1.2.840.10008.1.2.4.51 |
| | | JPEG Lossless, Process 14 (selection value 1) | 1.2.840.10008.1.2.4.70 |
| | | JPEG Lossless, Process 14 Non-HIER | 1.2.840.10008.1.2.4.57 |
| | | JPEG 2000 Lossless | 1.2.840.10008.1.2.4.90 |
| | | JPEG 2000 Lossy | 1.2.840.10008.1.2.4.91 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| Surface Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.5 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic Text SR | 1.2.840.10008.5.1.4.1.1.88.11 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Acceptable presentation contexts Storage

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCP | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Encapsulated PDF | 1.2.840.10008.5.1.4.1.1.104.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| CSA Non-Image | 1.3.12.2.1107.5.9.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

***1**: US Retired and US Multi-Frame Retired images are converted to US images/US Multi-Frame images before being stored in the local database. The conversion creates new images, which implies new UIDs.

! With the RLE Lossless Transfer Syntax and the JPEG Lossless, Process14, Non_HIER Transfer Syntax the DICOM application decompresses the image before storing it in the database.

JPEG 2000 decompression is supported only for import in connection with the COSMOS / *syngo* Imaging workplace.

Private attributes in sequence items are removed during import to *syngo*.

After receiving images of types Multi-frame Single-Bit Secondary Capture Image, Multi-frame Grayscale Byte Secondary Capture Image, Multi-frame Grayscale Word Secondary Capture Image and Multi-frame True Color Secondary Capture Image, the SOP class UID of the received image is changed to that of a Secondary Capture Image (1.2.840.10008.5.1.4.1.1.7) and stored.

### *SOP-Specific Conformance Statement - Receiving Images*

The Somaris/7 DICOM application conforms to the Full Storage Service Class at Level 2.

When a C-STORE-RQ is successfully received, the SIEMENS Somaris/7 DICOM receiver performs a quick plausibility test on the received image and available system resources. If this test succeeds, it returns the status SUCCESS, otherwise one of the following status codes is returned and the association is aborted:

- Refused (A700):
  This error status indicates a lack of Resources (for example, not enough disk space) on the Somaris/7 modality.
- Invalid Dataset (A900):
  The data set does not contain one of the attributes "Study Instance UID", "Series UID" or "SOP Instance UID", or one of these has an invalid value.
- Processing Error (0110):
  An error occurred while processing the image, making it impossible to proceed.

**Attention!** The image is saved in the database only after the response is sent. If an error occurs during this operation, the association is aborted. This implies that a C-STORE-RSP with status SUCCESS does not mean that the image was successfully stored in the database.

In order to confirm that the images sent were successfully stored in the database, the sending application should use the Storage Commitment Service.

If an image instance is received having an SOP Instance UID that is already used by an Instance stored in the database, then the received image is discarded. The existing image is not superseded by the received image. Therefore, if a remote node sends the same image twice (as identified by the SOP Instance UID), only one image (the first) is kept in the database of the DICOM receiver.

The following sections differentiate between the attribute contents required for image viewing. The Somaris/7 DICOM application supports more formats for the storage of images than it does for viewing.

### Image Pixel Attribute Acceptance Criterion for Grayscale Images - Viewing

The Siemens Somaris/7 Multi-Modality application accepts the MONOCHROME1 and MONOCHROME2 photometric interpretation pixel format and graphic overlay - with unsigned integers and 8 or 16 bits allocated. The following values are accepted:

**Pixel plane**

- Samples per pixel (attribute 0028, 0002) = 1
- Photometric interpretation (attribute 0028,0004) = “MONOCHROME1”
- Photometric interpretation (attribute 0028,0004) = “MONOCHROME2”
- Pixel representation (attribute 0028, 0103) = 0 (unsigned)
- Bits allocated (attribute 0028, 0100) = 8, 16
- Bits stored (attribute 0028,0101) = 8, 10, 12, 14,15, 16
- High bit (attribute 0028,0102) = 7,9,11
- Only the aspect ratio (attribute 0028,0034) 1:1 is supported

**Overlay plane**

- Overlay type (attribute 60xx, 0040) = “G”
- Overlay bits allocated (attribute 60xx, 0100) = 16
- Overlay bit position (attribute 60xx, 0102) = 12, 13, 14, 15 (only bits above high bit permitted)
- The graphic overlay is shifted to fill overlay planes from bit 12 and consecutive bits.

**Overlay plane**

- Overlay type (attribute 60xx, 0040) = “G”
- Overlay bits allocated (attribute 60xx, 0100) = 1
- Overlay bit position (attribute 60xx, 0102) = 0
- Overlay data (attribute 60xx, 3000) = supported.

The Somaris/7 DICOM Viewing application also accepts the MONOCHROME1 and MONOCHROME2 photometric interpretation pixel format with binary 2’s complement integers and 16 bits allocated. The following values are accepted:

**Pixel plane**

- Samples per pixel (attribute 0028, 0002) = 1
- Photometric interpretation (attribute 0028,0004) = “MONOCHROME1”
- Photometric interpretation (attribute 0028,0004) = “MONOCHROME2”
- Pixel representation (attribute 0028, 0103) = 1 (signed)
- Bits allocated (attribute 0028, 0100) = 16
- Bits stored (attribute 0028,0101) = 16
- High bit (attribute 0028,0102) = 15
- Only the aspect ratio (attribute 0028,0034) 1:1 is supported

**Overlay plane**

- Overlay type (attribute 60xx, 0040) = “G”
- Overlay bits allocated (attribute 60xx, 0100) = 1
- Overlay bit position (attribute 60xx, 0102) = 0
- Overlay data (attribute 60xx, 3000) = supported.

For the MOD LUT, both the linear LUT (Rescale Slope/Intercept) and the MOD LUT SQ are supported and considered when pixel data is displayed. However, there are two limitations. The MOD LUT SQ is ignored in the following cases:

- 8-bit signed pixels
- The pixel format is changed by the MOD LUT (for example, 8 bits -> 16 bits).

If the MOD LUT SQ contains multiple LUTs, then only the first one is used.

For the VOI LUT, both the linear LUT (Window Center/Width) and the VOI LUT SQ are also supported (VOI LUT SQ with 8-bit or 16-bit LUT data).

However, if both a VOI LUT SQ and a linear MOD LUT are specified within one image, then the value of Rescale Slope is restricted to 1.

If the VOI LUT SQ contains multiple LUTs, then only the first one is used by default. The other VOI LUTs are selectable.

In this version, the Display application supports only rectangular and circular shutters. Images with other shutter types are displayed without a shutter.

### Image Pixel Attribute Acceptance Criterion for Color Images - Viewing

The Siemens Somaris/7 Multi-Modality Viewing application supports the RGB color image description with the unsigned integer, 24-bit color image plane pixel format. The following values are accepted:

- Samples per pixel (attribute 0028, 0002) = 3
- Photometric interpretation (attribute 0028,0004) = “RGB”
- Pixel representation (attribute 0028, 0103) = 0
- Bits allocated (attribute 0028, 0100) = 8
- Bits stored (attribute 0028,0101) = 8
- High bit (attribute 0028,0102) = 7
- Planar configuration (attribute 0028,0006) = 0 (pixel interleave) or 1 (plane interleave)

The Siemens Somaris/7 Multi-Modality Viewing application supports the “Palette Color” color image description with the unsigned integer and 2’s complement pixel format:

- Samples per pixel (attribute 0028, 0002) = 1
- Photometric interpretation (attribute 0028,0004) = “PALETTE COLOR”
- Pixel representation (attribute 0028, 0103) = 0
- Bits allocated (attribute 0028, 0100) = 8 and bits stored (attribute 0028,0101) = 8
- Bits allocated (attribute 0028, 0100) = 16 and bits stored (attribute 0028,0101) = 16
- High bit (attribute 0028,0102) = 7, 15

Both 8-bit and 16-bit palettes are supported, but no Segmented Palette Color LUTs.

The Siemens Somaris/7 Multi-Modality Viewing application supports the YBR color image description with the unsigned integer pixel format. The following values are accepted:

- Samples per pixel (attribute 0028, 0002) = 3
- Photometric interpretation (attribute 0028,0004) = “YBR_FULL” or "YBR_FULL_422"
- Pixel representation (attribute 0028, 0103) = 0
- Bits allocated (attribute 0028, 0100) = 8 and bits stored (attribute 0028,0101) = 8
- High bit (attribute 0028,0102) = 7

If Somaris/7 software does any persistent changes on a YBR image, the resulting new image is saved with the Photometric Interpretation "RGB".

### *Presentation Context Acceptance Criterion - Storage SCP*

The Somaris/7 DICOM application accepts any number of Verification or storage SOP classes that are listed above. The number of presentation contexts accepted is limited to a maximum of 127 (DICOM limit). In case the Siemens Somaris/7 DICOM application runs out of resources, it will reject the association request.

### *Transfer Syntax Selection Policies - Storage SCP*

The Somaris/7 DICOM application supports the following transfer syntaxes:

- Implicit VR Little Endian, Explicit VR Little Endian and Explicit VR Big Endian transfer syntaxes
- JPEG Baseline and JPEG Extended transfer syntaxes (JPEG lossy)
- JPEG Lossless Non-Hierarchical transfer syntax
- RLE Lossless Transfer Syntax
- JPEG 2000 Lossless and Lossy Transfer Syntax

Any proposed presentation context including one of these transfer syntaxes is accepted. Any proposed presentation context that does not include one of these Transfer Syntaxes is rejected.

The order of preference for accepting Transfer Syntaxes within Presentation Contexts or Presentation Contexts with single Transfer Syntaxes is as follows:

1. JPEG Lossy Extended
2. JPEG Lossless Non-hierarchical
3. JPEG Lossy Baseline
4. RLE Lossless
5. Explicit VR Little Endian
6. Explicit VR Big Endian
7. Implicit VR Little Endian
8. JPEG 2000 Lossy
9. JPEG 2000 Lossless

With the RLE Lossless Transfer Syntax, the Somaris/7 application decompresses the image before storing it in the database.

With the Implicit VR Little Endian Transfer Syntax, the Somaris/7 DICOM application removes any private attributes not known to the application. A decision on the removal of a Private Element is done if there are NO entries in the attribute dictionary of the Somaris/7 DICOM application.

**Therefore, any of the Explicit VR Transfer Syntaxes shall preferrably be used by the Storage SCUs when sending Composite Image Instances to the Somaris/7 application.**

## Storage Commitment AE Specification

The Somaris/7 DICOM application provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU

Standard SOP Classes as Storage Commitment Push Model

| SOP Class Name | SOP Class UID |
|---|---|
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 |

## Association Establishment Policies

### General

When a Send Job is successfully completed, the DICOM application generates a Storage Commitment Identifier which references all instances of the processed job. The Commit Request is then sent over a single open association. Somaris/7 waits for Status responses of the Storage Commitment Request. If the Provider accepts the Storage Commitment with the Success Status, the generated Transaction UID is kept, together with study identification data and a time stamp. Depending on the configuration, the association is closed when the configured time-out has elapsed or after a response is received. If the association is closed before a response was received, the response is then expected on a different association. Multiple Storage Commitment Requests can be pending.

The default PDU size is of 32 kB.

### Number of Associations

The Somaris/7 DICOM application initiates several associations at the same time, one for each destination to which a transfer request is being processed in the active job queue list.

The Somaris/7 DICOM application is able to accept multiple associations at the same time. It can handle up to 10 associations in parallel.

### Asynchronous Nature

The Somaris/7 DICOM application does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

## Association Initiation Policy

The Somaris/7 Storage Commitment Application Entity acts as a Service Class User (SCU) for the

- Storage Commitment Push Model Service Class (to request commitment for the storage of instances previously sent)

To do so, Somaris/7 issues one of the following:

- N-ACTION DIMSE to request commitment
- N-EVENT-REPORT DIMSE to respond to a received storage commitment request if the association was closed by the remote system prior to response

### Real-World Activity - Send Storage Commitment Request

#### Associated Real-World Activity - Job Completed

The Somaris/7 Storage Commitment application sends the commit request (N-ACTION_RQ) message and waits for acceptance of this request (N_ACTION-RSP). After receiving this, the transaction is marked as "waiting".

Depending on a particular configuration value, the association is then closed or kept open. In the first case, another configurable time-out gives the time in hours (h) and minutes (m) (by default 1h:0m) to wait for the corresponding commit response (N_EVENT-REPORT). In the second case, this time is the (also configurable) time-out for the association. For both cases, if the commit response (N-EVENT-REPORT) does not arrive during the configured time, the transaction is marked as having failed. Somaris/7 does not re-send objects because of a failed Storage Commitment result in any case.

If the commit response (N-EVENT-REPORT) received has the status of "complete - failure exists", the transaction is marked as having failed, otherwise the transaction is marked as "completed". In both cases, a message is given to the user.

#### Proposed Presentation Contexts - Job Completed

The Somaris/7 Storage Commitment AE will proposes Presentation Contexts as shown in the following table:

Initiation presentation context Storage Commitment Request

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

#### SOP-Specific Conformance Statement - Job Completed

Storage Commitment is supported for all the SOP class UIDs mentioned in *Acceptable presentation contexts Storage* →A2-21.

The Referenced Study Component Sequence is not supported.

The Storage Media File Set ID and UID Attributes are not supported in the commitment request (N-ACTION primitive) invoked by the Storage Commitment SCU.

## Association Acceptance Policy

The Somaris/7 Storage Commitment AE accepts an association in this case: When it is acting as an SCU and is configured to receive N-EVENT-REPORT on a separate association.

### Associated Real-World Activity - Receive Storage Commit SCU

#### Associated Real-World Activity - Update Flags

Consider the case when the Somaris/7 Storage Commitment AE has sent a Storage Commitment Request and, being configured to receive responses on a separate association, has closed the association. It now gets an association request from the Storage Commitment SCP that wants to send the results. The application waits for Storage Commitment Notification triggers. Any incoming notification is checked for validity, that is, whether the related Transaction UID is still part of the Pending Request Queue.

If the Notification is valid, the Notification Identifier is evaluated and the related Instances marked with the related status. The overall Commit Status of the higher Information Entities is derived by propagation of all Image entities included in a study.

The status flags directly affected by Storage Commitment results and indicated in the different entities of the Patient Browser list can be one of the following (English UI assumed):

- "AC" or "SC" - Successful Commitment. A means archived to the configured archive destination, whereas S means sent to any other destination.
- "Af" or "Sf" - Commitment failed
- "A?" or "S?" - Commitment request is sent, response is pending

In case of failure, the user has to repeat the transfer of images to the Archive destination. Another Storage Commitment is performed after sending is completed successfully.

**Note:** The flags A (Archived) and S (Sent) only indicate the reception of the images by the remote AE. They do not indicate the successful storage in the intended archive. The data may be lost if it is deleted by the sender, for example, by an auto-delete mechanism, and cannot be stored by the receiver.

Advise the service technician to always use 'storage commitment' if this is supported by the sender and receiver of data.

**Source of danger:** Misleading/misinterpretation of the flags AC/SC

The flags "AC" and "SC" indicate the reception and storage on the hard disk on the receiver side, which may be not sufficient to fulfill the regulatory requirements of long-term archiving.

**Consequence:** Loss of data before the required period of retention expires.

**Remedy:** Sending data with the attributes AC or SC over the network indicates a safe data transfer but does not fulfill the regulatory requirements of long-term archiving. Objects with the "committed" flag may be deleted by the user. Observe the regulatory requirements regarding the archiving procedure.

### *Accepted Presentation Contexts - Update Flags*

The Somaris/7 Storage Commitment AE accepts Presentation Contexts as shown in the following table:

Presentation context accepted for Storage Commitment

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

### *SOP-Specific Conformance Statement - Update Flags*

If the Commitment Response (N_EVENT_REPORT) received has the status "complete - failure exists", the transaction is marked as having failed, otherwise the transaction is marked as "completed". In both cases, a message is given to the user.

The related status flags are set for the committed images in the local database.

The Somaris/7 DICOM application does NOT support the Storage Media File Set ID attributes.

## Query/Retrieve AE Specification

The Query/Retrieve SCU requests that the remote SCP matches all keys specified in the request against the information in its database, and that the identified images are moved over a different (C-MOVE) storage association.

The Query/Retrieve SCP responds to queries based on the records of its database and images are sent to the requesting SCU or to a different storage destination.

The Somaris/7 DICOM application provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

SOP Classes as a Query/Retrieve SCU

| SOP Class Name | SOP Class UID |
|---|---|
| Patient Root Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 |
| Patient Root Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.1.2 |
| Study Root Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.2.1 |
| Study Root Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.2.2 |
| Patient/Study Only Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.3.1 |
| Patient/Study Only Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.3.2 |

The Somaris/7 DICOM implementation provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCP:

SOP Classes as a Query/Retrieve SCP

| SOP Class Name | SOP Class UID |
|---|---|
| Patient Root Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 |
| Patient Root Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.1.2 |
| Patient Root Query/Retrieve Information Model - GET | 1.2.840.10008.5.1.4.1.2.1.3 |
| Study Root Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.2.1 |
| Study Root Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.2.2 |
| Study Root Query/Retrieve Information Model - GET | 1.2.840.10008.5.1.4.1.2.2.3 |
| Patient/Study Only Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.3.1 |
| Patient/Study Only Query/Retrieve Information Model - MOVE | 1.2.840.10008.5.1.4.1.2.3.2 |
| Patient/Study Only Query/Retrieve Information Model - GET | 1.2.840.10008.5.1.4.1.2.3.3 |

! See also the Storage DICOM Conformance Statement (*Association Acceptance Policy* →A2-20) to compare for conformance of the C-STORE sub-operation generated by the C-MOVE and C-GET DIMSE services. Furthermore, compare the supported Storage Service SOP classes described in the Storage DICOM Conformance Statement of the Modality to which the images shall be transferred.

## Association Establishment Policies

### General

With the "Search..." function, the query data is entered and the DICOM Query/Retrieve application is started. A query request is sent out to one remote node that can be selected from a list of configured Query Providers, and the response data is displayed to the user. In order to provide detailed information, early additional queries are sent for the more detailed levels not yet covered by the first results. Upon request (Import), the retrieval of selected items is initiated.

The default PDU size used is of 32 kB.

### Number of Associations

The Somaris/7 DICOM Query/Retrieve application initiates several associations at a time, one for each query/retrieve request being processed.

The Somaris/7 DICOM Query/Retrieve application is able to accept multiple associations at a time. It can handle up to 10 associations in parallel.

### Asynchronous Nature

The Somaris/7 DICOM Query/Retrieve application does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

## Association Initiation Policy

The Query user interface requests the query data from the user and triggers C-FIND requests to the selected remote node. The response data is displayed in the query UI for further data navigation.

When requesting an import of related items, the browser requests the retrieve application to send a C_MOVE request to the related remote node. Images are then received by the Storage SCP as described in the related section.

The following DIMSE-C operations are supported as an SCU:

- C-FIND
- C-MOVE

### Real-World Activity - Find SCU

#### Associated Real-World Activity - Find SCU "Search"

The associated Real-World activity is to fill out a query form with search data and pass it as queries to the network application, which issues a C-FIND over a previously built association. The remote SCP responds with related data entries that are passed to a browser application. When the data transfer has finished, the association is closed.

### *Proposed Presentation Contexts - Find SCU*

The Somaris/7 DICOM Query application proposes Presentation Contexts as shown in the following table:

Proposed Presentation Contexts - Find SCU:

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | See Note |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Patient Root Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 |
| Study Root Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.2.1 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 |
| Patient Study only Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.3.1 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 |

! Which of the three query models is to be used by the Somaris/7 Query SCU application can be configured. If the Patient and Study Root Abstract Syntaxes are configured, the C_FIND SCU uses the Patient Root Model only for C-FIND requests on the PATIENT level. For all other levels, it uses the STUDY Root Model.

It is highly recommended that you only configure the Study Root Model if the corresponding Query SCP supports this Model. If the Query SCP does not support queries on the Series Level, the Patient Study Only Model should be used.

### SOP-Specific Conformance Statement - Find SCU

The Somaris/7 DICOM Query/Retrieve SCU supports hierarchical queries with all mandatory search keys. On each level, the unique attributes of all previous levels are also sent (values are provided by the user by selection from a list). For instance, for a query using the patient root model on the Series level, the Patient ID of the currently selected patient and the Study Instance UID of the currently selected study are included in the message. The interactive querying of attributes on the IMAGE level is not supported by the Query SCU. Nevertheless, the retrieval of individual Objects is possible.

The Query dialog in Somaris/7 offers search keys on different levels (Patient, Study, Series). Depending on the used Query Model (Patient Root, Study Root, Patient Study Only), the Somaris/7 DICOM Query/Retrieve SCU executes multiple queries sequentially.

Example using the Patient Root Model:
The first query is performed on patient level with the entered patient level query keys. For each query result, a new query is performed on study level with the entered study level query keys. Finally, for each result on study level, a query is performed on series level with the entered series level keys.

The *Query attributes* describe the search keys for the three query models (Patient Root, Study Root, Patient Study Only) that the Somaris/7 Query/Retrieve application supports as an SCU. Matchings are either wildcard, which means that the user can supply a string containing wildcards, or universal, which means that the attribute is returned no matter what value it has.

Query attributes

| Attribute name | Tag | Type | Matching | user input | return value displayed |
|---|---|---|---|---|---|
| **Patient level**[a] | | | | | |
| Patient name | (0010,0010) | R | wildcard[d] | enter value | yes |
| Patient ID | (0010,0020) | U | wildcard[d] | enter value | yes |
| Patient's birth date | (0010,0030) | O | universal (NULL) | enter value | yes |
| Patient's sex | (0010,0040) | O | universal (NULL) | enter value | yes |
| Number of Patient related studies | (0020,1200) | O | universal (NULL) | - | yes[b] |
| Number of Patient relates series | (0020,1202) | O | universal (NULL) | - | no |
| Number of Patient related instances | (0020,1204) | O | universal (NULL) | - | no |
| **Study level** | | | | | |
| Patient Name[c] | (0010,0010) | R | wildcard[d] | enter value | yes |

| Attribute name | Tag | Type | Matching | user input | return value displayed |
|---|---|---|---|---|---|
| Patient ID | (0010,0020) | R | wildcard[d] | enter value | yes |
| Patient's Birth date[c] | (0010,0030) | O | universal (NULL) | enter value | yes |
| Patient's Sex[c] | (0010,0040) | O | universal (NULL) | enter value | yes |
| Study Instance UID | (0020,000D) | U | single value | - | no |
| Study ID | (0020,0010) | R | universal (NULL) | enter value[d] | yes |
| Study Date | (0008,0020) | R | universal (NULL) | enter value[e] | yes |
| Study Time | (0008,0030) | R | universal (NULL) | - | yes |
| Accession Number | (0008,0050) | R | universal (NULL) | enter value[d] | yes |
| Study Description | (0008,1030) | O | universal (NULL) | enter value[d] | yes |
| Referring Physician's Name | (0008,0090) | O | universal (NULL) | enter value[d] | yes |
| Name of Physician Reading Study | (0008,1060) | O | universal (NULL) | enter value[d] | yes |
| Modalities in Study | (0008,0061) | O | universal (NULL) | enter value[d] | yes |
| Storage Media File Set ID | (0008,0130) | O | universal (NULL) | - | no |
| Retrieve AE Title | (0008,0054) | O | universal (NULL) | - | no |
| Number of Study related Series | (0020,1206) | O | universal (NULL) | - | yes[f] |
| Number of Study related Instances | (0020,1208) | O | universal (NULL) | - | no |
| **Series level** | | | | | |
| Series Instance UID | (0020,000E) | U | single value | - | no |
| Series Number | (0020,0011) | R | universal (NULL) | - | yes |
| Modality | (0008,0060) | R | universal (NULL) | enter value | yes |
| Series Date | (0008,0021) | O | universal (NULL) | - | yes |
| Series Time | (0008,0031) | O | universal (NULL) | - | yes |
| Study ID | (0020,0010) | O | universal (NULL) | - | yes |
| Series Description | (0008,103E) | O | universal (NULL) | enter value[d] | yes |

| Attribute name | Tag | Type | Matching | user input | return value displayed |
|---|---|---|---|---|---|
| Storage Media File Set ID | (0008,0130) | O | universal (NULL) | - | yes |
| Retrieve AE Title | (0008,0054) | O | universal (NULL) | - | yes |
| Body Part Examined | (0018,0015) | O | universal (NULL) | enter value[d] | yes |
| Scan Options | (0018,0022) | O | universal (NULL) | -[d] | yes |
| Protocol name | (0018,1030) | O | universal (NULL) | - | no |
| Performing Physician | (0018,1050) | O | universal (NULL) | enter value[d] | yes |
| Performed procedure step start date | (0040,0244) | O | universal (NULL) | - | yes |
| Performed procedure step start time | (0040,0245) | O | universal (NULL) | - | yes |
| Request Attribute Sequence | (0040,0275) | O | universal (NULL) | - | yes |
| >Requested Procedure ID | (0040,1001) | O | universal (NULL) | - | yes |
| >Scheduled Procedure ID | (0040,0009) | O | universal (NULL) | - | yes |
| Number of series related instances | (0020,1209) | O | universal (NULL) | - | yes |
| **Image Level** | | | | | |
| SOP Instance UID | (0008,0018) | U | single value | - | no |
| Image Number | (0020,0013) | R | universal (NULL) | - | yes |
| Storage Media File Set ID | (0008,0130) | O | universal (NULL) | - | no |
| Retrieve AE Title | (0008,0054) | O | universal (NULL) | - | no |
| Instance Date | (0008,0023) | O | universal (NULL) | - | no |
| Instance Time | (0008,0033) | O | universal (NULL) | - | no |
| Number of Frames | (0028,0008) | O | universal (NULL) | - | yes |
| Content Date | (0008,0023) | O | single value, range matching, universal | enter value | yes |
| Content Time | (0008,0033) | O | single value, range matching, universal | enter value | yes |
| Image comments | (0020,4000) | O | universal (NULL) | - | no |

| Attribute name | Tag | Type | Matching | user input | return value displayed |
|---|---|---|---|---|---|
| Referenced Request Sequence | (0040,A370) | O | sequence matching | - | yes |
| > Accession Number | (0008,0050) | O | single value, universal | - | yes |
| > Requested Procedure ID | (0040,1000) | O | single value, universal | - | yes |
| Concept Name Code Sequence | (0040,A043) | O | sequence matching | enter value | yes |
| > Code Value | (0008,0100) | O | single value, universal, wildcard | enter value | yes |
| > Coding Scheme Designator | (0008,0102) | O | single value, universal, wildcard | - | yes |
| > Coding Scheme Version | (0008,0103) | O | single value, universal, wildcard | - | yes |
| > Code Meaning | (0008,0104) | O | single value, universal, wildcard | - | yes |
| Template Identifier | (0040,DB00) | O | single value, universal, wildcard | - | yes |
| Completion Flag | (0040,A491) | O | single value, universal, wildcard | enter value | yes |
| Verification Flag | (0040,A493) | O | single value, universal, wildcard | enter value | yes |
| Verifying Observer Sequence | (0040,A073) | O | sequence matching | enter value | yes |
| > Verifying Organization | (0008,A072) | O | single value, universal, wildcard | - | yes |
| > Verifying DateTime | (0008,A030) | O | single value, range matching, universal | enter value | yes |
| > Verifying Observer Name | (0008,A075) | O | single value, universal, wildcard | enter value | yes |
| > Verifying Observer Identification Code Sequence | (0040,A088) | O | sequence matching | | yes |
| >> Code Value | (0008,0100) | O | single value, universal, wildcard | - | yes |
| >> Coding Scheme Designator | (0008,0102) | O | single value, universal, wildcard | - | yes |

| Attribute name | Tag | Type | Matching | user input | return value displayed |
|---|---|---|---|---|---|
| >> Coding Scheme Version | (0008,0103) | O | single value, universal, wildcard | - | yes |
| >> Code Meaning | (0008,0104) | O | single value, universal, wildcard | - | yes |

[a.] Only for the Patient Root or Patient Study Only information model

[b.] Implicitly visualized in the UI if no study and series search attributes have been entered

[c.] Only for the Study Root information model

[d.] A "*" is always added to the user supplied string

[e.] Date range possible

[f.] Implicitly visualized in the UI if no series search attributes have been entered

The Find SCU interprets the following status codes:

C-FIND response status

| Service Status | Meaning | Protocol Codes | Related Fields |
|---|---|---|---|
| Refused | Out of Resources | A700 | (0000,0902) |
| Failed | Identifier does not match SOP Class | A900 | (0000,0901) (0000,0902) |
| | Unable to process | Cxxx | (0000,0901) (0000,0902) |
| Cancel | Matching terminated due to Cancel request | FE00 | None |
| Success | Matching is complete - No final Identifier is supplied | 0000 | None |
| Pending | Matches are continuing - the Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys | FF00 | Identifier |
| | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier | FF01 | Identifier |

### Real-World Activity - Move SCU

#### Associated Real-World Activity - Move SCU "Import"

The operator selects a data entry in the Query UI and activates the "Import" function.

This generates a retrieval request to the archival application, which issues a C-MOVE service according to the Patient Root or Study Root query model. The Storage Service Class Conformance Statement of the SCP describes the C-STORE service, which is generated by processing the C-MOVE service.

The transferred image data is processed as described in the storage class SCP descriptions.

The possibility to request the remote C-MOVE provider to move data to an application entity other than the C-MOVE SCU (the Somaris/7 DICOM application) is NOT used.

#### Proposed Presentation Contexts - Move SCU "Import"

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Proposed Presentation Contexts - Move SCU

| **Presentation Context Table** | | **Role** | **Extended Negotiation** | |
|---|---|---|---|---|
| | | SCU | See Note | |
| **Abstract Syntax** | | **Transfer Syntax** | | |
| **Name** | **UID** | **Name List** | **UID List** | |
| Patient Root Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.1.2 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 | (1) |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 | |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 | |
| Study Root Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.2.2 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 | (1) |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 | |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 | |

Proposed Presentation Contexts - Move SCU

| Presentation Context Table | | Role | Extended Negotiation | |
|---|---|---|---|---|
| | | SCU | See Note | |
| **Abstract Syntax** | | **Transfer Syntax** | | |
| **Name** | **UID** | **Name List** | **UID List** | |
| Patient Study Only Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.3.2 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 | (2) |
| | | DICOM Explicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2.1 | |
| | | DICOM Explicit VR Big Endian Transfer Syntax | 1.2.840.10008.1.2.2 | |

(1) C-MOVE extended negotiation is not supported by the SCU

(2) The Study Transfer supports C-MOVE on Patient level

### *SOP-Specific Conformance Statement - Move SCU "Import"*

The C-MOVE presentation context is negotiated at the time of establishment of the association. The C-STORE sub-operations must be done on a different association to transfer images to their own Storage Service Class SCP.

The Move SCU interprets the following status codes:
C-MOVE response status

| Service Status | Meaning | Protocol Codes | Related Fields |
|---|---|---|---|
| Refused | Out of Resources - Unable to calculate number of matches | A701 | (0000,0902) |
| | Out of Resources - Unable to perform sub-operations | A702 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Failed | Identifier does not match SOP Class | A900 | (0000,0901)<br>(0000,0902) |
| Failed | Unable to process | Cxxx | (0000,0901)<br>(0000,0902) |
| Cancel | Sub-operations terminated due to Cancel Indication | FE00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Warning | Sub-operations Complete - One or more Failures of Warnings | B000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Pending | Sub-operations are continuing | FF00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Success | Sub-operations Complete - No Failures or Warning | 0000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |

### Association Acceptance Policy

The Query/Retrieve SCU and SCP establish an association by using the DICOM association services. During association establishment, the Query/Retrieve application entities negotiate the supported SOP classes to exchange the capabilities of the SCU and the SCP.

The following DIMSE-C operations are supported as an SCP:

- C-FIND
- C-GET
- C-MOVE
- C-FIND-CANCEL
- C-GET-CANCEL
- C-MOVE-CANCEL

### Real-World Activity - Find SCP

#### Associated Real-World Activity - Find SCP

The associated Real-World activity is to respond to query requests to an SCU with the Patient Root, Study Root and Patient/Study Only query models. Relational retrieve operations are NOT supported. Using a C-FIND-CANCEL request, the running query can be cancelled at any time.

The SCP supports multiple C-FIND-requests over the same association, but not multiple C-MOVE requests.

### *Accepted Presentation Contexts - Find SCP*

The Somaris/7 Query/Retrieve AE accepts Presentation Contexts as shown in the following table:

Accepted Presentation Contexts - Find SCP

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | See Note |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Patient Root Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Study Root Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Patient/Study Only Query/Retrieve Model - FIND | 1.2.840.10008.5.1.4.1.2.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

C-FIND Extended Negotiation is NOT supported by the SCP.

The order of preference in accepting a Transfer syntax is the following:

1. Explicit VR Little Endian
2. Explicit VR Big Endian
3. Implicit VR Little Endian

### *SOP-Specific Conformance Statement - Find SCP*

The Somaris/7 DICOM Query/Retrieve SCP supports hierarchical queries with all mandatory and optional search keys.

The following six notes apply to the handling of the Patient's Name attribute (0010,0010) as a Query/Retrieve SCP. The syntactical structure of the Patient's Name (0010,0010) attribute is as follows:

<single byte group>=<ideographic group>=<phonetic group>

Each group may have up to five components, which are separated by carets "^".

1. The matching of the Patient's Name attribute (0010,0010) is case-insensitive.
2. If a search string matches the complete value of a database object's Patient's Name, a match is returned.
3. If a search string matches an individual group (single byte, ideographic or phonetic) of a database object's Patient's Name, a match is returned.
4. If a search string matches two consecutive groups of a database object's Patient's Name, a match will be returned.
5. Redundant group separators "=" or component separators "^" are treated as insignificant for matching.
6. Leading and trailing blanks within a component or a group of Patient's Name (0010,0010) are treated as insignificant for matching.

Except for the Patient's Name attribute (0010,0010), any other query attribute contents are treated as Case Sensitive.

In wildcard queries, the symbol "?" is treated as "*" by the C-FIND-SCP application. As a consequence, the query string "?abc*" is processed as "*abc*".

If the value of the patient level unique key "Patient ID" is not known, it may be returned with zero length. The "Image Comments" attribute is not included in the C-FIND-RSP, if this is not set in the DB, even if it was requested as the return key in the related C-FIND-RQ.

Use of the Storage Media File Set ID and Retrieve AE Title attributes with the C-FIND-RSP message:

- The C-FIND SCP may return the Storage Media File Set ID (0088,0130) and Storage Media File Set UID (0088,0140) DICOM attributes empty or not at all. The Storage Media File Set ID - if existent - can be returned at Study/Series/Image Level. Only on Image Level, the values ONLINE, NEARLINE or OFFLINE are returned to indicate the Storage Location of the related instance.
- The C-FIND SCP may return the Retrieve AE Title (0008,0054) DICOM attribute as empty or not at all. The Retrieve AE Title - if existent - can only be returned at Image Level (for the Patient Root and Study Root models) or at Study Level (for the Patient/Study Only model).

Relational Queries are NOT supported.

A remote DICOM AE can cancel the running query by sending a C-FIND-CANCEL. It is possible that matches continue (more C-FIND responses with status PENDING) until the cancel operation has completed.

The attributes supported on the various levels of the three information models are listed in the tables of the following sections.

### Patient Root Information Model

Patient level attributes, Patient Root Information Model, Patient level attributes

| Attribute name | Tag | Type | Matching |
|---|---|---|---|
| Patient Name | (0010,0010) | R | single value, wildcard, universal |
| Patient ID | (0010,0020) | U | single value, wildcard, universal |
| Patient's Birth Date | (0010,0030) | O | single value, range, universal |
| Patient's Birth Time | (0010,0032) | O | single value, range, universal |
| Patient's Sex | (0010,0040) | O | single value, wildcard, universal |
| Ethnic Group | (0010,2160) | O | single value, wildcard, universal |
| Patient Comments | (0010,4000) | O | wildcard, universal |
| Number of Patient related Studies | (0020,1200) | O | universal |
| Number of Patient related Series | (0020,1202) | O | universal |
| Number of Patient related Instances | (0020,1204) | O | universal |

Study level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Study Instance UID | (0020,000D) | U | single value, list of UIDs |
| Study ID | (0020,0010) | R | single value, wildcard, universal |
| Study Date | (0008,0020) | R | single value, range, universal |
| Study Time | (0008,0030) | R | single value, range, universal |
| Accession Number | (0008,0050) | R | single value, wildcard, universal |
| Referring Physician's Name | (0008,0090) | O | single value, wildcard, universal |
| Study Description | (0008,1030) | O | single value, wildcard, universal |
| Admitting Diagnoses Description | (0008,1080) | O | single value, wildcard, universal |

Study level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Patient's Age | (0010,1010) | O | single value, wildcard, universal |
| Patient's Size | (0010,1020) | O | single value, universal |
| Patient's Weight | (0010,1030) | O | single value, universal |
| Occupation | (0010,2180) | O | single value, wildcard, universal |
| Additional Patient History | (0010,21B0) | O | wildcard, universal |
| Name of Physician reading Study | (0008,1060) | O | single value, wildcard, universal |
| Modalities in Study | (0008,0061) | O | multiple values, universal |
| Number of Study related Series | (0020,1206) | O | universal |
| Number of study related Instances | (0020,1208) | O | universal |

Series level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Series Instance UID | (0020,000E) | U | single value, list of UID |
| Series Number | (0020,0011) | R | single value, universal |
| Modality | (0008,0060) | R | single value, wildcard, universal |
| Laterality | (0020,0060) | O | single value, wildcard, universal |
| Body Part Examined | (0018,0015) | O | single value, wildcard, universal |
| Patient Position | (0018,5100) | O | single value, wildcard, universal |
| Smallest Pixel Value in Series | (0028,0108) | O | single value, universal |

Series level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Largest Pixel Value in Series | (0028,0109) | O | single value, universal |
| Protocol Name | (0018,1030) | O | single value, wildcard, universal |
| Series Date | (0008,0021) | O | single value, range, universal |
| Series Time | (0008,0031) | O | single value, range, universal |
| Series Description | (0008,103E) | O | single value, wildcard, universal |
| Operator's Name | (0008,1070) | O | single value, wildcard, universal |
| Performing Physician's Name | (0008,1050) | O | single value, wildcard, universal |
| Performed Procedure Step Start Date | (0040,0244) | O | universal |
| Performed Procedure Step Start Time | (0040,0245) | O | universal |
| Number of series related Instances | (0020,1209) | O | universal |
| Referenced Request Sequence | (0040,A370) | O | sequence matching |
| >Requested Procedure ID | (0040,1001) | O | single value, universal |

Image level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| SOP Instance UID | (0008,0018) | U | single value, list of UID |
| SOP Class UID | (0008,0016) | U | single value |
| Instance Number | (0020,0013) | R | single value, universal |
| Content Date | (0008,0023) | O | single value, range, universal |
| Content Time | (0008,0033) | O | single value, range, universal |
| Modality | (0008,0060) | O | single value, wildcard, universal |

Image level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Image comments | (0020,4000) | O | universal |
| Concept Name Code Sequence | (0040,A043) | O | sequence matching |
| > Code Value | (0008,0100) | O | single value, universal, wild-card |
| > Coding Scheme Designator | (0008,0102) | O | single value, universal, wild-card |
| > Coding Scheme Version | (0008,0103) | O | single value, universal, wild-card |
| > Code Meaning | (0008,0104) | O | single value, universal, wild-card |
| Template Identifier | (0040,DB00) | O | single value, universal, wild-card |
| Completion Flag | (0040,A491) | O | single value, universal, wild-card |
| Verification Flag | (0040,A493) | O | single value, universal, wild-card |
| Verifying Observer Sequence | (0040,A073) | O | sequence matching |
| > Verifying Organization | (0008,A072) | O | single value, universal, wild-card |
| > Verifying DateTime | (0008,A030) | O | single value, range matching, universal |
| > Verifying Observer Name | (0008,A075) | O | single value, universal, wild-card |
| > Verifying Observer Identification Code Sequence | (0040,A088) | O | sequence matching |
| >> Code Value | (0008,0100) | O | single value, universal, wild-card |
| >> Coding Scheme Designator | (0008,0102) | O | single value, universal, wild-card |

Image level attributes, Patient Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| >> Coding Scheme Version | (0008,0103) | O | single value, universal, wild-card |
| >> Code Meaning | (0008,0104) | O | single value, universal, wild-card |

### Study Root Information Model

Study level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Patient Name | (0010,0010) | R | single value, wildcard, universal |
| Patient ID | (0010,0020) | R | single value, wildcard, universal |
| Patient's Birth Date | (0010,0030) | O | single value, range, universal |
| Patient's Birth Time | (0010,0032) | O | single value, range, universal |
| Patient's Sex | (0010,0040) | O | single value, wildcard, universal |
| Patient Comments | (0010,4000) | O | wildcard, universal |
| Number of Patient related Studies | (0020,1200) | O | universal |
| Number of Patient relates Series | (0020,1202) | O | universal |
| Number of Patient related Instances | (0020,1204) | O | universal |
| Study Instance UID | (0020,000D) | U | single value, list of UIDs |
| Study ID | (0020,0010) | R | single value, wildcard, universal |
| Study Date | (0008,0020) | R | single value, range, universal |
| Study Time | (0008,0030) | R | single value, range, universal |
| Accession Number | (0008,0050) | R | single value, wildcard, universal |
| Referring Physician's Name | (0008,0090) | O | single value, wildcard, universal |
| Study Description | (0008,1030) | O | single value, wildcard, universal |

Study level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Admitting Diagnoses Description | (0008,1080) | O | single value, wildcard, universal |
| Patient's Age | (0010,1010) | O | single value, wildcard, universal |
| Patient's Size | (0010,1020) | O | single value, universal |
| Patient's Weight | (0010,1030) | O | single value, universal |
| Occupation | (0010,2180) | O | single value, wildcard, universal |
| Additional Patient History | (0010,21B0) | O | wildcard, universal |
| Name of Physician reading Study | (0008,1060) | O | single value, wildcard, universal |
| Modalities in Study | (0008,0061) | O | multiple values, universal |
| Number of Study related Series | (0020,1206) | O | universal |
| Number of Study related Instances | (0020,1208) | O | universal |

Series level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Series Instance UID | (0020,000E) | U | single value, list of UID |
| Series Number | (0020,0011) | R | single value, universal |
| Modality | (0008,0060) | R | single value, wildcard, universal |
| Laterality | (0020,0060) | O | single value, wildcard, universal |
| Body Part Examined | (0018,0015) | O | single value, wildcard, universal |
| Patient Position | (0018,5100) | O | single value, wildcard, universal |

Series level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Smallest Pixel Value in Series | (0028,0108) | O | single value, universal |
| Largest Pixel Value in Series | (0028,0109) | O | single value, universal |
| Protocol Name | (0018,1030) | O | single value, wildcard, universal |
| Series Date | (0008,0021) | O | single value, range, universal |
| Series Time | (0008,0031) | O | single value, range, universal |
| Series Description | (0008,103E) | O | single value, wildcard, universal |
| Operators Name | (0008,1070) | O | single value, wildcard, universal |
| Performing Physician's Name | (0008,1050) | O | single value, wildcard, universal |
| Performed Procedure Step Start Date | (0040,0244) | O | universal |
| Performed Procedure Step Start Time | (0040,0245) | O | universal |
| Number of Series related Instances | (0020,1209) | O | universal |

Image level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| SOP Instance UID | (0008,0018) | U | single value, list of UID |
| SOP Class UID | (0008,0016) | U | single value, |
| Instance Number | (0020,0013) | R | single value, universal |
| Content Date | (0008,0023) | O | single value, range, universal |
| Content Time | (0008,0033) | O | single value, range, universal |
| Modality | (0008,0060) | O | single value, wildcard, universal |
| Image Comments | (0020,4000) | O | universal |

Image level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Referenced Request Sequence | (0040,A370) | O | sequence matching |
| > Accession Number | (0008,0050) | O | single value, universal |
| > Requested Procedure ID | (0040,1000) | O | single value, universal |
| Concept Name Code Sequence | (0040,A043) | O | sequence matching |
| > Code Value | (0008,0100) | O | single value, universal, wildcard |
| > Coding Scheme Designator | (0008,0102) | O | single value, universal, wildcard |
| > Coding Scheme Version | (0008,0103) | O | single value, universal, wildcard |
| > Code Meaning | (0008,0104) | O | single value, universal, wildcard |
| Template Identifier | (0040,DB00) | O | single value, universal, wildcard |
| Completion Flag | (0040,A491) | O | single value, universal, wildcard |
| Verification Flag | (0040,A493) | O | single value, universal, wildcard |
| Verifying Observer Sequence | (0040,A073) | O | sequence matching |
| > Verifying Organization | (0008,A072) | O | single value, universal, wildcard |
| > Verifying DateTime | (0008,A030) | O | single value, range matching, universal |
| > Verifying Observer Name | (0008,A075) | O | single value, universal, wildcard |
| > Verifying Observer Identification Code Sequence | (0040,A088) | O | sequence matching |
| >> Code Value | (0008,0100) | O | single value, universal, wildcard |

Image level attributes, Study Root Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| >> Coding Scheme Designator | (0008,0102) | O | single value, universal, wild-card |
| >> Coding Scheme Version | (0008,0103) | O | single value, universal, wild-card |
| >> Code Meaning | (0008,0104) | O | single value, universal, wild-card |

### Patient Study Only Information Models

Patient instance level, Patient Study Only Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Patient Name | (0010,0010) | R | single value, wildcard, universal |
| Patient ID | (0010,0020) | U | single value, wildcard, universal |
| Patient's Birth Date | (0010,0030) | O | single value, range, universal |
| Patient's Birth Time | (0010,0032) | O | single value, range, universal |
| Patient's Sex | (0010,0040) | O | single value, wildcard, universal |
| Ethnic Group | (0010,2160) | O | single value, wildcard, universal |
| Patient comments | (0010,4000) | O | wildcard, universal |
| Number of Patient related Studies | (0020,1200) | O | universal |
| Number of Patient relates Series | (0020,1202) | O | universal |
| Number of Patient related Instances | (0020,1204) | O | universal |

Study level attributes, Patient Study Only Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Study Instance UID | (0020,000D) | U | single value, list of UIDs |
| Study ID | (0020,0010) | R | single value, wildcard, universal |
| Study Date | (0008,0020) | R | single value, range, universal |
| Study Time | (0008,0030) | R | single value, range, universal |
| Accession Number | (0008,0050) | R | single value, wildcard, universal |
| Referring Physician's Name | (0008,0090) | O | single value, wildcard, universal |
| Study Description | (0008,1030) | O | single value, wildcard, universal |

Study level attributes, Patient Study Only Information Model

| Attribute name | Tag | Usage SCU | Matching |
|---|---|---|---|
| Admitting Diagnoses Description | (0008,1080) | O | single value, wildcard, universal |
| Patient's Age | (0010,1010) | O | single value, wildcard, universal |
| Patient's Size | (0010,1020) | O | single value, universal |
| Patient's Weight | (0010,1030) | O | single value, universal |
| Occupation | (0010,2180) | O | single value, wildcard, universal |
| Additional Patient History | (0010,21B0) | O | wildcard, universal |
| Name of Physician reading Study | (0008,1060) | O | single value, wildcard, universal |
| Modalities in Study | (0008,0061) | O | multiple values, universal |
| Number of Study related Series | (0020,1206) | O | universal |
| Number of Study related Instances | (0020,1208) | O | universal |

The C-FIND-RSP message contains the following attributes:

- Specific Character Set (0008,0005), if there is a specific character set in use
- Query/Retrieve Level (0008,0052) from the C_FIND_RQ
- Retrieve AE Title (0008,0054) at study, series and image level.
  This value is a list of AE titles from which the images can be retrieved. It is always NULL except for at the lowest level of the query model (Image level for the the Patient Root or Study Root models, and Study level for the Patient/Study Only model).
- Storage Media File set ID (0088,0130) at the study, series and image levels. If Storage Media File set ID is not present, a NULL value is returned.
- Attributes requested by C_FIND_RQ and supported by the SCP

See also *SOP-Specific Conformance Statement - Find SCP* →A2-60

The Find SCP returns the following status codes:

C-FIND return status

| Service Status | Meaning | Protocol Codes | Related Fields |
|---|---|---|---|
| Refused | Out of Resources | A700 | (0000,0902) |
| Failed | Identifier does not match SOP Class | A900 | (0000,0901)<br>(0000,0902) |
| | Unable to process | C001 | (0000,0901)<br>(0000,0902) |
| Cancel | Matching terminated due to Cancel request | FE00 | None |
| Success | Matching is complete - No final Identifier is supplied | 0000 | None |
| Pending | Matches are continuing - the Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys | FF00 | Identifier |
| | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier | FF01 | Identifier |

## *Real-World Activity - Get SCP*

### *Associated Real-World Activity - Get SCP*

The associated Real-World activity is to respond to retrieve requests initiated by a foreign SCU. The SCP supports the Patient Root, Study Root and Patient/Study Only query models. The Storage Service Class Conformance Statement describes the C-STORE service which is generated by the C-GET service. Relational retrieve operations areNOT supported.

Multiple C-GET requests over the same association are NOT supported.

### *Proposed Presentation Contexts - Get SCP*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Proposed Presentation Contexts -- Get SCP

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | See Note |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Patient Root Query/Retrieve Model - GET | 1.2.840.10008.5.1.4.1.2.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Study Root Query/Retrieve Model - GET | 1.2.840.10008.5.1.4.1.2.2.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Patient/Study Only Query/Retrieve Model - GET | 1.2.840.10008.5.1.4.1.2.3.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

C-GET Extended Negotiation is NOT supported by the SCP.

The order of preference in accepting a Transfer syntax is as follows:

1. Explicit VR Little Endian
2. Explicit VR Big Endian
3. Implicit VR Little Endian

### *SOP-Specific Conformance Statement - Get SCP*

The C-GET presentation context must be negotiated at the time of establishment of the association, along with the C-STORE sub-operations that must be carried out on the same association as the C-GET operation. Relational retrieve operations are NOT supported.

All unique keys have to be supplied according to the selected Query/Retrieve Level. The related tables in the C-FIND SCP section give information about "U" marked key attributes.

In DICOM wildcard queries, the symbol '?' is treated as '*' by the Find SCP. Therefore, a wildcard query using "?abc*" is actually treated as "*abc*".

The Get SCP returns the following status codes:
C-GET return status

| Service Status | Meaning | Protocol Codes | Related Fields |
|---|---|---|---|
| Refused | Out of Resources - Unable to calculate number of matches | A701 | (0000,0902) |
| | Out of Resources - Unable to perform sub-operations | A702 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Failed | Identifier does not match SOP Class | A900 | (0000,0901)<br>(0000,0902) |
| | Unable to process | C001 | (0000,0901)<br>(0000,0902) |
| Cancel | Sub-operations terminated due to Cancel Indication | FE00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Warning | Sub-operations Complete - One or more Failures of Warnings | B000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Pending | Sub-operations are continuing | FF00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Success | Sub-operations Complete - No Failures or Warning | 0000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |

## *Real-World Activity - Move SCP*

### *Associated Real-World Activity - Move SCP*

The associated Real-World activity is to respond to retrieve requests to an SCU. The SCP supports the Patient Root, Study Root and Patient/Study Only query models. The Storage Service Class Conformance Statement describes the C-STORE service that is generated by the C-MOVE service. Relational retrieve operations are NOT supported.

Multiple C-MOVE requests over the same association are NOT supported.

### *Accepted Presentation Contexts - Move SCP*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Proposed Presentation Contexts - Move SCP

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCP | See Note |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Patient Root Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Study Root Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.2.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Patient/Study Only Query/Retrieve Model - MOVE | 1.2.840.10008.5.1.4.1.2.3.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

C-MOVE Extended Negotiation is NOT supported by the SCP.

The order of preference in accepting a Transfer syntax is as follows:

1. Explicit VR Little Endian
2. Explicit VR Big Endian
3. Implicit VR Little Endian

### *SOP-Specific Conformance Statement - Move SCP*

The C-MOVE presentation context is negotiated at the time of establishment of the association. The C-STORE sub-operations are done on a different association, specified in the C-MOVE request, to transfer images to another SCP of the Storage Service Class. Relational retrieve operations are NOT supported.

All unique keys have to be supplied according to the selected Query/Retrieve Level. The related tables in the C-FIND SCP section give information about "U" marked key attributes.

In DICOM wildcard queries, the symbol '?' is treated as '*' by Find SCP. Therefore, a wildcard query with "?abc*" is actually treated as "*abc*".

The Move SCP returns the following status codes:

C-MOVE return status

| Service Status | Meaning | Protocol Codes | Related Fields |
|---|---|---|---|
| Refused | Out of Resources - Unable to calculate number of matches | A701 | (0000,0902) |
| | Out of Resources - Unable to perform sub-operations | A702 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Failed | Identifier does not match SOP Class | A900 | (0000,0901)<br>(0000,0902) |
| | Unable to process | C001 | (0000,0901)<br>(0000,0902) |
| Cancel | Sub-operations terminated due to Cancel Indication | FE00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Warning | Sub-operations Complete - One or more Failures of Warnings | B000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Pending | Sub-operations are continuing | FF00 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |
| Success | Sub-operations Complete - No Failures or Warning | 0000 | (0000,1020)<br>(0000,1021)<br>(0000,1022)<br>(0000,1023) |

## Print AE Specification

The print management SCU (HCS) invokes print management DIMSE services to transfer images from the local AE to the remote SCP AE, in order to print the images with the defined film format and size on a selected network DICOM hardcopy printer (see DICOM part 4 annex H). This is done in a "full-page" print mode.

The Somaris/7 DICOM implementation provides Standard Conformance to the following DICOM V3.0 Basic Grayscale Print Management Meta SOP Classes as an SCU:

Basic Grayscale Print Management Meta SOP-Classes

| SOP Class Name | SOP Class UID |
|---|---|
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 |
| ■ Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 |
| ■ Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 |
| ■ Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 |
| ■ Printer SOP Class | 1.2.840.10008.5.1.1.16 |
| ■ Print Job SOP Class | 1.2.840.10008.5.1.1.14 |
| ■ Presentation LUT SOP Class | 1.2.840.10008.5.1.1.23 |

Basic Color Print Management Meta SOP-Classes

| SOP Class Name | SOP Class UID |
|---|---|
| Basic Color Print Management Meta SOP Class | 1.2.840.10008.5.1.1.18 |
| ■ Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 |
| ■ Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 |
| ■ Basic Color Image Box SOP Class | 1.2.840.10008.5.1.1.4.1 |
| ■ Printer SOP Class | 1.2.840.10008.5.1.1.16 |
| ■ Print Job SOP Class | 1.2.840.10008.5.1.1.14 |

## Association Establishment Policies

### General

Whenever a film is completely set up and printed by command or automatism, the job is prepared for processing. As soon as the queue is ready to process, the job is activated and carried out according to the processing data. The related Print application initiates an association to the print destination and processes the printing of the related information.

The default PDU size is of 32 kB.

### Number of Associations

The Somaris/7 DICOM Print application initiates one association at a time for the print device configured.

### Asynchronous Nature

The Somaris/7 DICOM implementation does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

## Association Initiation Policy

When triggered by the Print job queue, the Print Management SCU establishes an association by using the DICOM association services. With the help of the N-GET request for the printer SOP Class, the Status is determined before printing.

In case no problems are encountered with the N-CREATE/N-SET Services for the related Basic Print SOP Classes, the film sheet is set up for printing and the image(s) is(are) transferred to the printer device.

After the last film has been printed from the queue, the Print application leaves the association open for another 60 seconds. If a new film job is ready for printing within this time limit, the job will be processed immediately over the still open association. If there is no new job, the association is closed after the time-out has elapsed. This is done to optimize automatic printing.

During the "idle time" (no open association to printer) the Print application issues a cyclic camera status request (using N-GET of the Printer SOP Class) every 5 minutes.

### Real-World Activity

#### Associated Real-World Activity - Printing a Printer Job Queue Entry

Whenever a film sheet is prepared by the user, it is forwarded to the Printer Job queue. As soon as the associated Printer device is available, the job is activated and an association is set up.

The film sheet is internally processed, converted to a Standard/1-1 page and the page image is sent. The status is controlled by waiting for an N-EVENT message throughout the transfer until the last image or film sheet has been sent.

If the response from the remote application contains a status other than Success or Warning, the association is aborted.

*Proposed Presentation Contexts (Presentation Context Table)*

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Presentation contexts - Print SCU

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Basic Grayscale Print Management Meta SOP class | 1.2.840.10008.5.1.1.9 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic Color Print Management Meta SOP class | 1.2.840.10008.5.1.1.18 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic film session SOP class | 1.2.840.10008.5.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic film box SOP class | 1.2.840.10008.5.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic grayscale image box SOP class | 1.2.840.10008.5.1.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Basic color image box SOP class | 1.2.840.10008.5.1.1.4.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Printer SOP class | 1.2.840.10008.5.1.1.16 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

Presentation contexts - Print SCU

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Print Job SOP class | 1.2.840.10008.5.1.1.14 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Presentation LUT SOP class | 1.2.840.10008.5.1.1.23 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

### *SOP-Specific Conformance Statement - Meta SOP Classes*

The Somaris/7 DICOM Print Management SCU conforms to the DICOM Basic Grayscale Print Management Meta SOP Class and Basic Color Print Management Meta SOP Class.

The application uses a setting platform to define the properties of the connected DICOM SCP, for example:

- Maximum number of print jobs in the queue
- Maximum number of print copies
- Supported film sizes of the connected DICOM SCP
- Supported film formats of the DICOM SCP
- Lookup table definition

The printing is only suspended in the case of a failure return status of the SCP.

**Basic Film Session SOP Class**

The Basic Film Session information object definition describes all the user defined parameters that are common for all the films of a film session. The Basic Film Session refers to one or more Basic Film Boxes that are printed on one hardcopy printer.

The Somaris/7 DICOM Print application supports the following DIMSE Service Elements for the Basic Film Session SOP class as an SCU:

- N-CREATE
- N-DELETE

The Basic Film Session SOP class N-CREATE-RQ (SCU) uses the following attributes:

Used Basic Film Session N-CREATE_RQ attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Number of Copies | (2000,0010) | U | 1 |
| Medium Type | (2000,0030) | U | BLUE FILM<br>CLEAR FILM<br>PAPER |
| Film Destination | (2000,0040) | U | MAGAZINE<br>PROCESSOR |

The number of copies sent to the DICOM printer is always 1. The job is sent n times for n copies.

The affected SOP Instance UID received with the N-CREATE-RSP message from the SCP is kept internally and used for later requests (for example, using N-DELETE-RQ) on the Basic Film Session SOP Class. Refer to the table below:

Attributes of the N-DELETE-RQ on the Basic Film Session SOP Class

| Attribute name | Tag | Source of information |
|---|---|---|
| Requested SOP Instance UID | (0000,1000) -> (0000,1001) | Affected SOP Instance UID of N-CREATE-RSP on Basic Film Session |

The N-DELETE-RQ on the Basic Film Session SOP Class is used to delete the entire Basic Film Session SOP Instance hierarchy.

The Basic Film Session SOP class interprets the following status codes (from the N-CREATE-RSP, N-DELETE-RSP messages):

Basic Film Session SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Failure | Film session SOP instance hierarchy does not contain film box SOP instances | C600 |
| | Unable to create print job, print queue is full | C601 |
| | Image size is larger than the image box size | C603 |

Basic Film Session SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Warning | Memory allocation not supported | B600 |
| | Film session printing is not supported | B601 |
| | Film box does not contain image box (empty page) | B602 |
| Success | Films belonging to the film session are accepted for printing | 0000 |

### Basic Film Box SOP Class

The Basic Film Box information object definition describes all the user-defined parameters of one film of the film session. The Basic Film Box information description defines the presentation parameters that are common for all images on a given sheet of film.

The Basic Film Box refers to one or more Image Boxes.

The following are supported as an SCU:

- N-CREATE
- N-ACTION
- N-DELETE

The Basic Film Box SOP class N-CREATE-RQ message uses the following attributes (the values used for each attribute depend on the DICOM Printer configuration within the Somaris/7 DICOM print management SCU):

Used Film Box N-CREATE_RQ attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Image Display Format | (2010,0010) | M | STANDARD\C-R |
| Referenced Film Session Sequence | (2010,0500) | M | |
| >Referenced SOP Class UID | (0008,1150) | M | 1.2.840.10008.5.1.1.1 |
| >Referenced SOP Instance UID | (0008,1155) | M | |
| Film Orientation | (2010,0040) | M | PORTRAIT<br>LANDSCAPE |

Used Film Box N-CREATE_RQ attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Film Size ID | (2010,0050) | M | 8INX10IN<br>10INX12IN<br>10INX14IN<br>11INX14IN<br>14INX14IN<br>14INX17IN<br>24CMX24CM<br>24CMX30CM |
| Magnification Type | (2010,0060) | M | BILINEAR<br>CUBIC<br>NONE<br>REPLICATE |
| Border Density | (2010,0100) | U | BLACK<br>WHITE |
| Max Density | (2010,0130) | U | 0 < Value |
| Min Density | (2010,0120) | U | 0 < Value < 50 |
| Illumination | (2010,015E) | U | 0 < Value<br>Required if Presentation LUT is present |
| Reflective Ambient Light | (2010,0160) | U | 0 < Value<br>Required if Presentation LUT is present |
| Referenced Presentation LUT Sequence | (2050,0500) | U | |

For Page Mode printing, the Image Display format used is Standard\1,1. For Image Mode Printing, the Image Display format used is Standard\C,R where C is the number of Columns and R is the number of Rows as specified in the Hardcopy Layout.

The N-CREATE-RSP message from the Print SCP includes the Referenced Image Box Sequence with its SOP Class / Instance UID pairs, which are stored internally to be further used by the subsequent Basic Image Box SOP Class N-SET-RQ messages.

When all Image Boxes (including parameters) for the film sheet have been set, the Somaris/7 DICOM print manager issues an N-ACTION-RQ message with the SOP Instance UID of the Basic Film Box (returned in N-CREATE-RSP of the Basic Film Box SOP class) and the Action Type ID 1.

The affected SOP Instance UID received with the N-CREATE-RSP message is kept internally and used for later requests (for example, using N-DELETE-RQ) on the Basic Film Box SOP Class. Refer to the table below:

Attributes of the N_DELETE_RQ on the Basic Film Session SOP Class

| Attribute name | Tag | Source of information |
|---|---|---|
| Requested SOP Instance UID | (0000,1000) -> (0000,1001) | Affected SOP Instance UID of N-CREATE-RSP on Basic Film Box |

The Basic Film Box SOP class interprets the following status codes:

Basic Film Box SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Failure | Unable to create print job; print queue is full | C602 |
| | Image size is larger than the image box size | C603 |
| Warning | Film box does not contain image box (empty page) | B603 |
| | Requested MinDensity or MaxDensity outside of printer's operating range | B605 |
| Success | Film accepted for printing | 0000 |

### Basic Grayscale Image Box SOP Class

The Basic Grayscale Image Box information object definition is the presentation of an image and image-related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data that apply to a single image of a sheet of film.

The Grayscale Image Box SOP class uses only the N-SET-RQ with the following attributes:

Used Basic Grayscale Image Box N-SET attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Image Position | (2020,0010) | M | 1 |
| Basic Grayscale Image Sequence | (2020,0110) | M | |
| >Samples Per Pixel | (0028,0002) | M | 1 |
| >Photometric Interpretation | (0028,0004) | M | MONOCHROME2 |
| >Rows | (0028,0010) | M | |
| >Columns | (0028,0011) | M | |

Used Basic Grayscale Image Box N-SET attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| >Pixel Aspect Ratio | (0028,0034) | M | |
| >Bits Allocated | (0028,0100) | M | 8,16 |
| >Bits Stored | (0028,0101) | M | 8,12 |
| >High Bit | (0028,0102) | M | 7,11 |
| >Pixel Representation | (0028,0103) | M | 0 |
| >Pixel Data | (7FE0,0010) | M | |

The Grayscale Image Box SOP class interprets the following status codes:

Basic Grayscale Image Box SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Failure | Image contains more pixels than the printer can print in the Image box | C603 |
| | Insufficient memory in printer to store the image | C605 |
| Warning | Requested MinDensity or MaxDensity outside of printer's operating range | B605 |
| Success | | 0000 |

### Basic Color Image Box SOP Class

The Basic Color Image Box information object definition is the presentation of an image and image-related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data that apply to a single image of a sheet of film.

The Color Image Box SOP class uses only the N-SET-RQ with the following attributes:

Used Basic Color Image Box N-SET attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Image Position | (2020,0010) | M | 1 |
| Basic Color Image Sequence | (2020,0111) | M | |
| >Samples Per Pixel | (0028,0002) | M | 3 |
| >Photometric Interpretation | (0028,0004) | M | RGB |
| >Planar Configuration | (0028,0006) | M | 0 |
| >Rows | (0028,0010) | M | |
| >Columns | (0028,0011) | M | |
| >Pixel Aspect Ratio | (0028,0034) | M | |

Used Basic Color Image Box N-SET attributes

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| >Bits Allocated | (0028,0100) | M | 8 |
| >Bits Stored | (0028,0101) | M | 8 |
| >High Bit | (0028,0102) | M | 7 |
| >Pixel Representation | (0028,0103) | M | 0 |
| >Pixel Data | (7FE0,0010) | M | |

The Color Image Box SOP class interprets the following status codes:

Basic Color Image Box SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Failure | Image contains more pixels than the printer can print in the Image box | C603 |
| | Insufficient memory in printer to store the image | C605 |
| Warning | Image size larger than the image box size | B604 |
| Success | | 0000 |

### Presentation LUT SOP Class

The objective of the Presentation LUT is to realize image hardcopy printing tailored for specific modalities, applications, and user preferences.

The output of the Presentation LUT consists of Presentation Values (P-Values). P-Values are approximately related to human perceptual response. They are intended to facilitate common input for hardcopy. P-Values are intended to be independent of the specific class or characteristics of the hardcopy device.

Attributes of the N_CREATE_RQ on the Presentation LUT SOP Class

| Attribute name | Tag | Usage SCU | Supported Values |
|---|---|---|---|
| Presentation LUT Shape | (2050,0020) | U | IDENTITY |

The affected SOP Instance UID received with the N-CREATE-RSP message is stored internally and used for later requests on the Basic Film Box (N-CREATE-RQ) and on the Presentation LUT (N-DELETE-RQ). Refer to the table below:

Attributes of the N_DELETE_RQ on the Presentation LUT SOP Class

| Attribute name | Tag | Source of information |
|---|---|---|
| Requested SOP Instance UID | (0000,1000) -> (0000,1001) | Affected SOP Instance UID of N-CREATE-RSP on Presentation LUT |

The Presentation LUT SOP class interprets the following status codes:

Presentation LUT SOP status

| Service Status | Meaning | Protocol Codes |
|---|---|---|
| Warning | Requested Min Density or Max Density outside the HCD's operating range. HCD uses its minimum or maximum density value instead. | B605 |
| Success | Presentation LUT was successfully created | 0000 |

### Printer SOP Class

The Printer SOP Class provides the possibility to monitor the status of the hardcopy printer in a synchronous and an asynchronous way.

The SCU uses the mandatory N-EVENT Report DIMSE service to monitor the changes of the printer status in an asynchronous way.

It can directly ask the Printer (SCP) for its status or can receive Events from the Print SCP asynchronously:

- N_GET as SCU
- N_EVENT_REPORT as SCU

In both cases, the following information is supported:

Used Printer N-EVENT report

| Event type name | Event | Attributes | Tag | Usage SCU |
|---|---|---|---|---|
| Normal | 1 | | | |
| Warning | 2 | Printer Status Info | (2110,0020) | U |
| Failure | 3 | Printer Status Info | (2110,0020) | U |

Mandatory Printer N-GET-RSP, N-EVENT-REPORT-RQ attributes

| Attribute name | Tag | Usage SCP | Supported values |
|---|---|---|---|
| Printer Status | (2110,0010) | M | NORMAL<br>FAILURE<br>WARNING |
| Printer Status Info | (2110,0020) | M | See *DICOM Print SCU - detailed status displays* →A2-90 |

For a detailed description of how Somaris/7 reacts to the various messages, please refer to *DICOM Print SCU - detailed status displays* →A2-90.

### Print Job SOP Class

The Print Job SOP Class provides the possibility to monitor the execution of the print process.

The Somaris/7 DICOM Print application supports the optional N-EVENT-REPORT DIMSE service to receive the changes of the print job status in an asynchronous way.

It can receive events from the Print SCP asynchronously:

- N-EVENT-REPORT

! Somaris/7 does not support receiving N-EVENT from the camera during print sessions; normally this is configurable in the camera.

The following information is supported:

Used Print Job N-EVENT report

| Event type name | Event | Attributes | Tag | Usage SCU |
|---|---|---|---|---|
| Pending | 1 | Execution Status Info | (2100,0030) | U |
| | | Print Job ID | (2100,0010) | - (Print Queue Management SOP Class not supported) |
| | | Film Session Label | (2000,0050) | U |
| | | Printer Name | (2110,0030) | U |
| Printing | 2 | Execution Status Info | (2100,0030) | U |
| | | Print Job ID | (2100,0010) | - (Print Queue Management SOP Class not supported) |
| | | Film Session Label | (2000,0050) | U |
| | | Printer Name | (2110,0030) | U |
| Done | 3 | Execution Status Info | (2100,0030) | U |
| | | Print Job ID | (2100,0010) | - (Print Queue Management SOP Class not supported) |
| | | Film Session Label | (2000,0050) | U |
| | | Printer Name | (2110,0030) | U |
| Failure | 4 | Execution Status Info | (2100,0030) | U |
| | | Print Job ID | (2100,0010) | - (Print Queue Management SOP Class not supported) |
| | | Film Session Label | (2000,0050) | U |
| | | Printer Name | (2110,0030) | U |

For a detailed description of how Somaris/7 reacts to the various messages, please refer to *DICOM Print SCU - detailed status displays* →A2-90.

### DICOM Print SCU - detailed status displays

The following tables document the behavior of the Somaris/7 DICOM Print AE in response to messages received for the printer SOP class and the print job SOP class.

Definitions of camera symbols:

- Idle: Camera is installed and ready; idle icon is displayed
- Interact: The user has to react in the near future, but not immediately.
  Example: A camera was low in 8x10 clear sheets: LOW 8x10 CLR was sent by N-EVENT-REPORT.
- Queue Stopped: The user has to react immediately. Either the camera needs immediate interaction or a job has been aborted.
  Example: A camera is out of 8x10 clear sheets, or is down, or a film job has been aborted.

! Different camera symbols are displayed according to the Printer Status Info.

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| **Printer Status info/ Execution Status info** | **Description** | **Message string visible in the Status Bar** | **Other action for *UI*/ camera symbol** |
|---|---|---|---|
| NORMAL | Camera is ready. | Camera is ready. | <None>/idle |
| BAD RECEIVE MGZ | There is a problem with the film receive magazine. Films from the printer cannot be transported into the magazine. | Problem with receive magazine. | <None>/interact |
| BAD SUPPLY MGZ | There is a problem with a film supply magazine. Films from this magazine cannot be transported into the printer. | Problem with supply magazine. | <None>/interact |
| CALIBRATING | The printer is self-calibrating and is expected to be available for normal operation shortly. | Self calibration. Please wait. | <None>/idle |
| CALIBRATION ERR | An error in the printer calibration has been detected; the quality of processed films may not be optimal. | Problem in calibration. Film quality may not be optimal. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| CHECK CHEMISTRY | A problem with the processor chemicals has been detected; the quality of processed films may not be optimal. | Problem with chemistry. Film quality may not be optimal. | <None>/interact |
| CHECK SORTER | There is an error in the film sorter. | Error in film sorter. | <None>/interact |
| CHEMICALS EMPTY | There are no processing chemicals in the processor; films will not be printed and processed until the processor is back to normal. | Camera chemistry empty. Please check. | <None>/interact |
| CHEMICALS LOW | The chemical level in the processor is low; if not corrected, it will probably shut down soon. | Camera chemistry low. Please check. | <None>/interact |
| COVER OPEN | One or more printer or processor covers, drawers, doors are open. | Camera cover, drawer or door open. | <None>/interact |
| ELEC CONFIG ERR | Printer configured improperly for this job. | Camera configured improperly for this job. Queue stopped. | Queue for this camera will be STOPPED/Queue stopped |
| ELEC DOWN | Printer is not operating due to some unspecified electrical hardware problem. | Camera electrical hardware problem. | <None>/interact |
| ELEC SW ERROR | Printer is not operating due to some unspecified software error. | Camera software problem. Queue stopped. | Queue for this camera will be STOPPED/queue stopped |
| EMPTY 8x10 | The 8x10 inch film supply magazine is empty. | 8x10 film supply empty. | <None>/interact |
| EMPTY 8x10 BLUE | The 8x10 inch blue film supply magazine is empty. | 8x10 blue film supply empty. | <None>/interact |
| EMPTY 8x10 CLR | The 8x10 inch clear film supply magazine is empty. | 8x10 clear film supply empty. | <None>/interact |
| EMPTY 8x10 PAPR | The 8x10 inch paper supply magazine is empty. | 8x10 paper supply empty. | <None>/interact |
| EMPTY 10x12 | The 10x12 inch film supply magazine is empty. | 10x12 film supply empty. | <None>/interact |
| EMPTY 10x12 BLUE | The 10x12 inch blue film supply magazine is empty. | 10x12 blue film supply empty. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| EMPTY 10x12 CLR | The 10x12 inch clear film supply magazine is empty. | 10x12 clear film supply empty. | <None>/interact |
| EMPTY 10x12 PAPR | The 10x12 inch paper supply magazine is empty. | 10x12 paper supply empty. | <None>/interact |
| EMPTY 10x14 | The 10x14 inch film supply magazine is empty. | 10x14 film supply empty. | <None>/interact |
| EMPTY 10x14 BLUE | The 10x14 inch blue film supply magazine is empty. | 10x14 blue film supply empty. | <None>/interact |
| EMPTY 10x14 CLR | The 10x14 inch clear film supply magazine is empty. | 10x14 clear film supply empty. | <None>/interact |
| EMPTY 10x14 PAPR | The 10x14 inch paper supply magazine is empty. | 10x14 paper supply empty. | <None>/interact |
| EMPTY 11x14 | The 11x14 inch film supply magazine is empty. | 11x14 film supply empty. | <None>/interact |
| EMPTY 11x14 BLUE | The 11x14 inch blue film supply magazine is empty. | 11x14 blue film supply empty. | <None>/interact |
| EMPTY 11x14 CLR | The 11x14 inch clear film supply magazine is empty. | 11x14 clear film supply empty. | <None>/interact |
| EMPTY 11x14 PAPR | The 11x14 inch paper supply magazine is empty. | 11x14 paper supply empty. | <None>/interact |
| EMPTY 14x14 | The 14x14 inch film supply magazine is empty. | 14x14 film supply empty. | <None>/interact |
| EMPTY 14x14 BLUE | The 14x14 inch blue film supply magazine is empty. | 14x14 blue film supply empty. | <None>/interact |
| EMPTY 14x14 CLR | The 14x14 inch clear film supply magazine is empty. | 14x14 clear film supply empty. | <None>/interact |
| EMPTY 14x14 PAPR | The 14x14 inch paper supply magazine is empty. | 14x14 paper supply empty. | <None>/interact |
| EMPTY 14x17 | The 14x17 inch film supply magazine is empty. | 14x17 film supply empty. | <None>/interact |
| EMPTY 14x17 BLUE | The 14x17 inch blue film supply magazine is empty. | 14x17 blue film supply empty. | <None>/interact |
| EMPTY 14x17 CLR | The 14x17 inch clear film supply magazine is empty. | 14x17 clear film supply empty. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| EMPTY 14x17 PAPR | The 14x17 inch paper supply magazine is empty. | 14x17 paper supply empty. | <None>/interact |
| EMPTY 24x24 | The 24x24 inch film supply magazine is empty. | 24x24 film supply empty. | <None>/interact |
| EMPTY 24x24 BLUE | The 24x24 inch blue film supply magazine is empty. | 24x24 blue film supply empty. | <None>/interact |
| EMPTY 24x24 CLR | The 24x24 inch clear film supply magazine is empty. | 24x24 clear film supply empty. | <None>/interact |
| EMPTY 24x24 PAPR | The 24x24 inch paper supply magazine is empty. | 24x24 paper supply empty. | <None>/interact |
| EMPTY 24x30 | The 24x30 inch film supply magazine is empty. | 24x30 film supply empty. | <None>/interact |
| EMPTY 24x30 BLUE | The 24x30 inch blue film supply magazine is empty. | 24x30 blue film supply empty. | <None>/interact |
| EMPTY 24x30 CLR | The 24x30 inch clear film supply magazine is empty. | 24x30 clear film supply empty. | <None>/interact |
| EMPTY 24x30 PAPR | The 24x30 inch paper supply magazine is empty. | 24x30 paper supply empty. | <None>/interact |
| EMPTY A4 PAPR | The A4 paper supply magazine is empty. | A4 paper supply empty. | <None>/interact |
| EMPTY A4 TRANS | The A4 transparency supply magazine is empty. | A4 transparency supply empty. | <None>/interact |
| EXPOSURE FAILURE | The exposure device has failed due to some unspecified reason. | Exposure device has failed. | <None>/interact |
| FILM JAM | A film transport error has occurred and a film is jammed in the printer or processor. | Film jam. | <None>/interact |
| FILM TRANSP ERR | There is a malfunction with the film transport; there may or may not be a film jam. | Film transport problem. | <None>/interact |
| FINISHER EMPTY | The finisher is empty. | Finisher is empty. | <None>/interact |
| FINISHER ERROR | The finisher is not operating due to some unspecified reason. | Finisher problem. | <None>/interact |
| FINISHER LOW | The finisher is low on supplies | Finisher low. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| LOW 8x10 | The 8x10 inch film supply magazine is low. | 8x10 film supply low. | <None>/interact |
| LOW 8x10 BLUE | The 8x10 inch blue film supply magazine is low. | 8x10 blue film supply low. | <None>/interact |
| LOW 8x10 CLR | The 8x10 inch clear film supply magazine is low. | 8x10 clear film supply low. | <None>/interact |
| LOW 8x10 PAPR | The 8x10 inch paper supply magazine is low. | 8x10 paper supply low. | <None>/interact |
| LOW 10x12 | The 10x12 inch film supply magazine is low. | 10x12 film supply low. | <None>/interact |
| LOW 10x12 BLUE | The 10x12 inch blue film supply magazine is low. | 10x12 blue film supply low. | <None>/interact |
| LOW 10x12 CLR | The 10x12 inch clear film supply magazine is low. | 10x12 clear film supply low. | <None>/interact |
| LOW 10x12 PAPR | The 10x12 inch paper supply magazine is low. | 10x12 paper supply low. | <None>/interact |
| LOW 10x14 | The 10x14 inch film supply magazine is low. | 10x14 film supply low. | <None>/interact |
| LOW 10x14 BLUE | The 10x14 inch blue film supply magazine is low. | 10x14 blue film supply low. | <None>/interact |
| LOW 10x14 CLR | The 10x14 inch clear film supply magazine is low. | 10x14 clear film supply low. | <None>/interact |
| LOW 10x14 PAPR | The 10x14 inch paper supply magazine is low. | 10x14 paper supply low. | <None>/interact |
| LOW 11x14 | The 11x14 inch film supply magazine is low. | 11x14 film supply low. | <None>/interact |
| LOW 11x14 BLUE | The 11x14 inch blue film supply magazine is low. | 11x14 blue film supply low. | <None>/interact |
| LOW 11x14 CLR | The 11x14 inch clear film supply magazine is low. | 11x14 clear film supply low. | <None>/interact |
| LOW 11x14 PAPR | The 11x14 inch paper supply magazine is low. | 11x14 paper supply low. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| LOW 14x14 | The 14x14 inch film supply magazine is low. | 14x14 film supply low. | <None>/interact |
| LOW 14x14 BLUE | The 14x14 inch blue film supply magazine is low. | 14x14 blue film supply low. | <None>/interact |
| LOW 14x14 CLR | The 14x14 inch clear film supply magazine is low. | 14x14 clear film supply low. | <None>/interact |
| LOW 14x14 PAPR | The 14x14 inch paper supply magazine is low. | 14x14 paper supply low. | <None>/interact |
| LOW 14x17 | The 14x17 inch film supply magazine is low. | 14x17 film supply low. | <None>/interact |
| LOW 14x17 BLUE | The 14x17 inch blue film supply magazine is low. | 14x17 blue film supply low. | <None>/interact |
| LOW 14x17 CLR | The 14x17 inch clear film supply magazine is low. | 14x17 clear film supply low. | <None>/interact |
| LOW 14x17 PAPR | The 14x17 inch paper supply magazine is low. | 14x17 paper supply low. | <None>/interact |
| LOW 24x24 | The 24x24 inch film supply magazine is low. | 24x24 film supply low. | <None>/interact |
| LOW 24x24 BLUE | The 24x24 inch blue film supply magazine is low. | 24x24 blue film supply low. | <None>/interact |
| LOW 24x24 CLR | The 24x24 inch clear film supply magazine is low. | 24x24 clear film supply low. | <None>/interact |
| LOW 24x24 PAPR | The 24x24 inch paper supply magazine is low. | 24x24 paper supply low. | <None>/interact |
| LOW 24x30 | The 24x30 inch film supply magazine is low. | 24x30 film supply low. | <None>/interact |
| LOW 24x30 BLUE | The 24x30 inch blue film supply magazine is low. | 24x30 blue film supply low. | <None>/interact |
| LOW 24x30 CLR | The 24x30 inch clear film supply magazine is low. | 24x30 clear film supply low. | <None>/interact |
| LOW 24x30 PAPR | The 24x30 inch paper supply magazine is low. | 24x30 paper supply low. | <None>/interact |
| LOW A4 PAPR | The A4 paper supply magazine is low. | A4 paper supply low. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| Printer Status info/ Execution Status info | Description | Message string visible in the Status Bar | Other action for *UI*/ camera symbol |
|---|---|---|---|
| LOW A4 TRANS | The A4 transparency supply magazine is low. | A4 transparency supply low. | <None>/interact |
| NO RECEIVE MGZ | The film receive magazine is not available. | Film receiver not available. | <None>/interact |
| NO RIBBON | The ribbon cartridge needs to be replaced. | Replace ribbon cartridge. | <None>/interact |
| NO SUPPLY MGZ | The film supply magazine specified for this job is not available. | Film supply not available. | <None>/interact |
| CHECK PRINTER | The printer is not ready at this time; operator intervention is required to make the printer available. | Check camera. | <None>/interact |
| CHECK PROC | The processor is not ready at this time; operator intervention is required to make the printer available. | Check processor. | <None>/interact |
| PRINTER DOWN | The printer is not operating due to some unspecified reason. | Camera down. | <None>/interact |
| PRINTER INIT | The printer is not ready at this time; it is expected to become available without intervention. For example, it may be in a normal warm-up state. | Camera initializing. | <None>/idle |
| PRINTER OFFLINE | The printer has been disabled by an operator or service person. | Camera off-line. | <None>/interact |
| PROC DOWN | The processor is not operating due to some unspecified reason. | Processor down. | <None>/interact |
| PROC INIT | The processor is not ready at this time; it is expected to become available without intervention. For example, it may be in a normal warm-up state. | Processor initializing. | <None>/idle |
| PROC OVERFLOW FL | Processor chemicals are approaching the overflow full mark. | Processor chemicals overflow. | <None>/interact |
| PROC OVERFLOW HI | Processor chemicals have reached the overflow full mark. | Processor chemicals near overflow. | <None>/interact |

Printer Status Infos in the Printer SOP Class/Execution Status Infos in the Print Job SOP Class

| **Printer Status info/ Execution Status info** | **Description** | **Message string visible in the Status Bar** | **Other action for *UI*/ camera symbol** |
|---|---|---|---|
| QUEUED | Print job in Queue | - | <None>/idle |
| RECEIVER FULL | The Film receive magazine is full. | Receiver full. | <None>/interact |
| REQ MED NOT INST | The requested film, paper, or other media supply magazine is installed in the printer, but may be available with operator intervention. | Install media supply. | <None>/interact |
| REQ MED NOT AVAI | The requested film, paper, or other media requested are not available on this printer. | Media supply not available on this camera. Queue stopped. Change camera. | Queue for this camera will be STOPPED/queue stopped |
| RIBBON ERROR | There is an unspecified problem with the print ribbon. | Error with print ribbon. | <None>/interact |
| SUPPLY EMPTY | The printer is out of film. | Camera out of film. | <None>/interact |
| SUPPLY LOW | The film supply is low. | Film supply low. | <None>/interact |
| UNKNOWN | There is an unspecified problem. | Unspecified problem with camera. | <None>/interact |

Printer Status Infos: Additional Agfa printer status infos

| **Printer Status info** | **Description** | **Message string visible in the Status Bar** | **Other action for *syngo*/ camera symbol** |
|---|---|---|---|
| WARMING UP | Printer is in the warm-up stage. Spooling of print jobs to disk is still possible. | Camera is warming up. | <None>idle |
| OFFLINE | Printer is switched off-line. Spooling of print jobs to disk is still possible. | Camera is switched off-line. | <None>/interact |
| NONE | General printer warning, no specific information is available. Spooling of print jobs to disk is still possible. | - | <None>/idle |

Printer Status Infos: Additional Kodak infos for Pacs Link (formerly Imation cameras)

| **Printer Status info** | **Description** | **Message string visible in the Status Bar** | **Other action for *syngo*/ camera symbol** |
|---|---|---|---|
| SUPPLY MGZ ERR | The supply magazine has an error. | Film supply has an error. | <None>/interact |

Printer Status Infos: Additional Kodak infos for Kodak 190

| Printer Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| PRINTER STOPPED | The printer has stopped. | Camera has stopped. | <None>/interact |
| FATAL ERROR | Fatal error. | Fatal error. Queue stopped. | Queue for this camera will be STOPPED/queue stopped |

Printer Status Infos: Additional Kodak infos for 2180/1120

| Printer Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| PRINTER NOT RDY | Printer not ready. | Camera not ready. | <None>/interact |
| CHECK PROCESSOR | Check processor. | Check processor. | <None>/interact |
| NO TONER | No toner. | No toner. | <None>/interact |
| FATAL | Fatal error. | Fatal error. Queue stopped. | Queue for this camera will be STOPPED/queue stopped |

Printer Status Infos: Additional Codonics infos

| Printer Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| STANDARD | Printer is ready. | Camera is ready. | <None>/Normal |
| LOAD A-SIZE | Load A-size media. | Load A-size media. | <None>/interact |
| LOAD A-DVPAPER | Load A-size black and white paper. | Load A-size black and white paper. | <None>/interact |
| LOAD A-CVPAPER | Load A-size color paper. | Load A-size color paper. | <None>/interact |
| LOAD A-CVTRANS | Load A-size transparencies. | Load A-size transparencies. | <None>/interact |
| LOAD A4-SIZE | Load A4-size media. | Load A4-size media. | <None>/interact |
| LOAD A4-DVPAPER | Load A4-size black and white paper. | Load A4-size black and white paper. | <None>/interact |
| LOAD A4-CVPAPER | Load A4-size color paper. | Load A4-size color paper. | <None>/interact |
| LOAD A4-CVTRANS | Load A4-size transparencies. | Load A4-size transparencies. | <None>/interact |

Printer Status Infos: Additional Codonics infos

| Printer Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| LOAD LA-SIZE | Load LA-size media. | Load LA-size media. | <None>/interact |
| LOAD LA-DVPAPER | Load LA-size black and white paper. | Load LA-size black and white paper. | <None>/interact |
| LOAD LA-CVPAPER | Load LA-size color paper. | Load LA-size color paper. | <None>/interact |
| LOAD LA-CVTRANS | Load LA-size transparencies. | Load LA-size transparencies. | <None>/interact |
| LOAD LA4-SIZE | Load LA4-size media. | Load LA4-size media. | <None>/interact |
| LOAD LA4-DVPAPER | Load LA4-size black and white paper. | Load LA4-size black and white paper. | <None>/interact |
| LOAD LA4-CVPAPER | Load LA4-size color paper. | Load LA4-size color paper. | <None>/interact |
| LOAD LA4-CVTRANS | Load LA4-size transparencies. | Load LA4-size transparencies. | <None>/interact |
| LOAD XLA-SIZE | Load XLA-size media. | Load XLA-size media. | <None>/interact |
| LOAD XLA-DVPAPER | Load XLA-size black and white paper. | Load XLA-size black and white paper. | <None>/interact |
| LOAD XLA-CVPAPER | Load XLA-size color paper. | Load XLA-size color paper. | <None>/interact |
| LOAD XLA-CVTRANS | Load XLA-size transparencies. | Load XLA-size transparencies. | <None>/interact |
| LOAD XLA4-SIZE | Load XLA4-size media. | Load XLA4-size media. | <None>/interact |
| LOAD XLA4-DVPAPE | Load XLA4-size black and white paper. | Load XLA4-size black and white paper. | <None>/interact |
| LOAD XLA4-CVPAPE | Load XLA4-size color paper. | Load XLA4-size color paper. | <None>/interact |
| LOAD XLA4-CVTRAN | Load XLA4-size transparencies. | Load XLA4-size transparencies. | <None>/interact |
| LOAD XLW-SIZE | Load XLW-size media. | Load XLW-size media. | <None>/interact |
| LOAD XLW-DVPAPER | Load XLW-size black and white paper. | Load XLW-size black and white paper. | <None>/interact |
| LOAD XLW-CVPAPER | Load XLW-size color paper. | Load XLW-size color paper. | <None>/interact |
| LOAD 8X10-SIZE | Load 8x10 media. | Load 8x10 media. | <None>/interact |

Printer Status Infos: Additional Codonics infos

| Printer Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| LOAD 8X10-DVFILM | Load 8x10 black and white film. | Load 8x10 black and white film. | <None>/interact |
| SUPPLY MISSING | The film supply magazine specified for this job is not available. | Film supply not available. | <None>/interact |
| RIBBON MISSING | Ribbon is missing. | Ribbon is missing. | <None>/interact |
| RIBBON EMPTY | Ribbon is empty. | Ribbon is empty. | <None>/interact |
| TOP COVER OPEN | Top cover of printer is open. | Top cover of camera is open. | <None>/interact |

Additional DICOM Execution Status Information - evaluation

| Execution Status info | Description | Message string visible in the Status Bar | Other action for *syngo*/ camera symbol |
|---|---|---|---|
| INVALID PAGE DES | The specified page layout cannot be printed or other page description errors have been detected. | Film Job cannot be printed on this camera. Queue stopped. Please redirect film job. | Queue for this camera will be STOPPED/Queue stopped |
| INSUFFICIENT MEMORY | There is not enough memory available to complete this job. | Not enough memory available in camera. Queue stopped. Please continue queue or change camera. | Queue for this camera will be STOPPED/Queue stopped |
| NONE | General printer warning, no specific information is available. Spooling of print jobs to disk is still possible. | - | <None>/idle |

**Additional DICOM Execution Status Information**

Printer Status Info and Execution Status Info are defined terms and can therefore be extended or reduced by camera manufacturers. In this way, *syngo* remains flexible.

If any other printer status info or execution status info is received, *syngo* will react as shown in the following table:

| Printer Status / Execution | Printer/Execution Status Info | Description | Message string visible in the Status Bar | Other action for *syngo*/camera symbol |
|---|---|---|---|---|
| WARNING | <any other> | <not defined status info> | Camera info: <status info> | <None>/interact |
| FAILURE | <any other> | <not defined status info> | Camera info: <status info><br>Queue stopped. | Queue for this camera will be STOPPED/Queue stopped |

## Modality Worklist AE Specification

The Modality Worklist SCU (patient registration in conjunction with the network application) requests that the remote SCP matches all keys specified in the query against the information in its worklist database.

The SIEMENS Somaris/7 DICOM implementation provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCU:

SOP Classes as an SCU

| SOP Class Name | SOP Class UID |
|---|---|
| Modality Worklist Information Model - FIND | 1.2.840.10008.5.1.4.31 |

## Association Establishment Policies

### General

It is possible to configure a cyclic update of the modality scheduler database through a background worklist request with date/time and modality information.

In addition, you can request a worklist update with "Update Worklist". No duplicate entries are added in the Scheduler DB. Entries are uniquely identified by the Study Instance UID (0020,000D) for the Requested Procedure and the SPS ID (0040,0009) in the SPS Sequence (0040,0100).

An interactive worklist query can be issued with search criteria entered in the patient-based Query dialog from the patient browser.

The default PDU size used is of 32 kB.

### Number of Associations

The Somaris/7 DICOM application initiates one association at a time to query worklist entry data.

### Asynchronous Nature

The Somaris/7 DICOM implementation does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

### Association Initiation Policy

The network application (if configured) queries the worklist periodically or by user request. Ever then it establishes an association by using the DICOM association services. During association establishment, the negotiation of SOP classes to exchange the capabilities of the SCU and the SCP is not supported.

The following DIMSE-C operation is supported as an SCU:

- C-FIND

### Real-World Activity

#### Associated Real-World Activity - Query (Update) Worklist

A network application performs worklist queries with the C-FIND request at regular intervals. In addition, it can be triggered by immediate request. The received worklist items are compared with the contents of the local scheduler database. New items are inserted into the scheduler database.

After each broad query, all RP/SPS that were cancelled or rescheduled to another modality at the RIS will be automatically removed from the scheduler DB, if the following applies:

1. The Examination of this procedure has not been started or finished yet.
2. The corresponding configuration item "Automatic removal of cancelled/rescheduled Request" was checked in the Service UI under the DICOM/HIS/RIS Node.

No automatic clean-up of the scheduler DB is performed after a Patient-based Query, since the worklist received does not give the complete list of all currently scheduled procedures for the modality.

#### Proposed Presentation Contexts - Query (Update) Worklist

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Proposed presentation contexts

| **Presentation Context Table** | | **Role** | **Extended Negotiation** |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Modality Worklist Information Model- FIND | 1.2.840.10008.5.1.4.31 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

*SOP-Specific Conformance Statement - Update Worklist*

### Search Key Attributes of the Worklist C-FIND

The Somaris/7 DICOM worklist SCU supports "broad worklist queries" with all the required search keys.

The following tables describe the "broad query" search keys that the SCU supports. A broad query is a query for all tasks scheduled for the SCU's own modality or own modality application entity defined with the following search keys:

Search Key Attributes in a broad worklist query

| Attribute name[a] | Tag | Matching Key Type | query value |
|---|---|---|---|
| **Scheduled Procedure Step** | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | R | |
| >Scheduled Station AE Title | (0040,0001) | R | Configurable[b]: own AET or "*" |
| >Scheduled Procedure Step Start Date | (0040,0002) | R | Configurable[c]: <act. Date>-<act Date> or range from UI |
| >Scheduled Procedure Step Start Time | (0040,0003) | R | Configurable[c]: <zero length> or range from UI |
| >Modality | (0008,0060) | R | Configurable[b]: own modality or "*" |

[a.] No other attributes of the Register Dialog used for C-FIND

[b.] It depends on the users' configuration (Options -> Configuration -> Patient Registration) whether their "own AET" is provided or not. Use the HIS/RIS tabcard for configuration.

[c.] It depends on the user configuration (Options -> Configuration -> Patient Registration) if the actual date with a full time range or an interactive input dialog for date/time specification is used (<startDate>-<endDate>).

! Since various SCP implementations depend on the Specific Character Set attribute to be sent with C-FIND in order to deliver the attribute filled with C-FIND-RSP (see below), as a default the attribute will be sent even if it is empty. In case this turns out to be a problem for a specific SCP, this can be configured in cooperation with Siemens so as not to include this attribute.

### Return Key Attributes of the Worklist C-FIND-RSP

The Somaris/7 DICOM worklist SCU supports worklist queries with return key attributes of all types. The following tables describe the return keys that the SCU supports.

An "x" in the UI column indicates that the attribute is visualized when browsing the Worklist results with the Patient Browser and/or during Patient Registration. The Patient Browser display is additionally influenced by the related Browser configuration.

A tag in the IOD column indicates that the related attribute is included in the SOP Instances of the IODs created during processing of this worklist request.

A tag in the MPPS column indicates that the related attribute is included in the SOP Instances of the MPPS objects created during processing of this worklist request. See also the tables *Performed Procedure Step N-CREATE Attributes* →A2-117 and *Performed Procedure Step N-SET Attributes* →A2-122.

Basic Worklist C_FIND_RSP Return Key Attributes

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| **SOP Common** | | | | | |
| Specific Character Set[a] | (0008,0005) | 1C | - | (0008,0005) | (0008,0005) |
| **Scheduled Procedure Step** | | | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | 1 | | | |
| >Modality | (0008,0060) | 1 | x | (0008,0060) | (0008,0060) |
| >Requested Contrast Agent | (0032,1070) | 2C | x | (0032,1070) | |
| >Scheduled Station AE Title | (0040,0001) | 1 | x | | (0040,0241)[b] |
| >Scheduled Procedure Step Start Date | (0040,0002) | 1 | x | | |
| >Scheduled Procedure Step Start Time | (0040,0003) | 1 | x | | |
| >Scheduled Procedure Step End Date | (0040,0004) | 3 | - | | |
| >Scheduled Procedure Step End Time | (0040,0005) | 3 | - | | |
| >Scheduled Performing Physician's Name | (0040,0006) | 1 | x | (0008,1050) | (0008,1050)[c] |
| >Scheduled Procedure Step Description[d] | (0040,0007) | 1C | x | (0040,0007)<br>(0040,0254) | (0040,0007)<br>(0040,0254) |
| >Scheduled Protocol Code Sequence[e] | (0040,0008) | 1C | - | (0040,0008)<br>(0040,0260)[f] | (0040,0008)<br>(0040,0260)[f] |
| >>Code Value | (0008,0100) | 1C | x | | |
| >>Coding Scheme Designator | (0008,0102) | 1C | x | | |
| >>Coding Scheme Version | (0008,0103) | 3 | x | | |
| >>Code Meaning | (0008,0104) | 3 | x | | |
| >Scheduled Procedure Step ID[g] | (0040,0009) | 1 | x | (0040,0009)<br>(0040,0253) | (0040,0009)<br>(0040,0253) |
| >Scheduled Station Name | (0040,0010) | 2 | x | | |

[a.] The Specific Character Set distributed via the Modality Worklist by the hospital network reflects the global hospital context, for example a hospital with a German context shall not restrict the worklist entries to ISO_IR 6 but will supply a character set adequate for holding all German language text input.

[b.] "Scheduled Station AE Title" is taken as the default for "Performed Station AE Title"

[c.] "Scheduled Performing Physician's Name" is taken as the default for "Performing Physician's Name"

[d.] "Scheduled Procedure Step Description" is taken as the default for "Performed Procedure Step Description"

[e.] Uses universal sequence match

[f.] "Scheduled Protocol Code Sequence" is taken as the default for "Performed Protocol Code Sequence"

[g.] "Scheduled Procedure Step ID" is taken as the default for "Performed Procedure Step ID"

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| >Scheduled Procedure Step Location | (0040,0011) | 2 | x | | (0040,0242)[a] |
| >Pre-Medication | (0040,0012) | 2C | x | | |
| >Scheduled Procedure Step Status | (0040,0020) | 3 | x | | |
| >Comments on the Scheduled Procedure Step | (0040,0400) | 3 | - | | |
| **Requested Procedure** | | | | | |
| Referenced Study Sequence[b] | (0008,1110) | 2 | - | (0008,1110) | (0008,1110) |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |
| Study Instance UID | (0020,000D) | 1 | - | (0020,000D) | (0020,000D) |
| Requested Procedure Description | (0032,1060) | 1C | x | (0032,1060) | (0032,1060) |
| Requested Procedure Code Sequence[b] | (0032,1064) | 1C | - | (0032,1032)[c]<br>(0032,1064) | (0032,1032)[c] |
| >Code Value | (0008,0100) | 1C | x | | |
| >Code Scheme Designator | (0008,0102) | 1C | x | | |
| >Code Scheme Version | (0008,0103) | 3 | x | | |
| >Code Meaning | (0008,0104) | 3 | x | | |
| Requested Procedure ID | (0040,1001) | 1 | x | (0040,1001)<br>(0020,0010)[d] | (0040,1001)<br>(0020,0010)[d] |
| Reason for the Requested Procedure | (0040,1002) | 3 | - | | |
| Requested Procedure Priority | (0040,1003) | 2 | x | | |
| Patient Transport Arrangements | (0040,1004) | 2 | - | | |
| Requested Procedure Location | (0040,1005) | 3 | - | | |
| Confidentiality Code | (0040,1008) | 3 | - | | |
| Reporting Priority | (0040,1009) | 3 | - | | |
| Names of Intended Recipients of results | (0040,1010) | 3 | - | (0008,1048) | |
| Requested Procedure Comments | (0040,1400) | 3 | x | | |

a. "Scheduled Procedure Step Location" is taken as the default for "Performed Procedure Step Location"

b. Uses universal sequence match

c. "Requested Procedure Code Sequence" is taken as the default for "Procedure Code Sequence"

d. "Requested Procedure ID" is taken as the default for "Study ID"

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| Reason for the Requested Procedure Code Sequence | (0040,100A) | 3 | - | | |
| **Imaging Service Request** | | | | | |
| Accession Number | (0008,0050) | 2 | x | (0008,0050) | (0008,0050) |
| Referring Physician's Name | (0008,0090) | 2 | x | (0008,0090) | |
| Requesting Physician | (0032,1032) | 2 | x | (0032,1032) | (0032,1032) |
| Requesting Service | (0032,1033) | 3 | x | (0032,1033) | |
| Reason for the Imaging Service Request | (0040,2001) | 3 | - | | |
| Issuing Date of Imaging Service Request | (0040,2004) | 3 | - | | |
| Issuing Time of Imaging Service Request | (0040,2005) | 3 | - | | |
| Placer Order Number / Imaging Service Request[a] | (0040,2016) | 3 | - | | (0040,2016) |
| Filler Order Number / Imaging Service Request[b] | (0040,2017) | 3 | - | | (0040,2017) |
| Order entered by... | (0040,2008) | 3 | - | | |
| Order Enterer's Location | (0040,2009) | 3 | - | | |
| Order Callback Phone Number | (0040,2010) | 3 | - | | |
| Imaging Service Request Comments | (0040,2400) | 3 | x | | |
| **Visit Identification** | | | | | |
| Institution Name | (0008,0080) | 3 | x | (0008,0080) | |
| Institution Address | (0008,0081) | 3 | - | (0008,0081) | |
| Institution Code Sequence[c] | (0008,0082) | 3 | - | | |
| >Code Value | (0008,0100) | 1C | | | |
| >Code Scheme Designator | (0008,0102) | 1C | | | |
| >Code Scheme Version | (0008,0103) | 3 | | | |
| >Code Meaning | (0008,0104) | 3 | | | |
| Admission ID | (0038,0010) | 2 | x | | |
| Issuer of Admission ID | (0038,0011) | 3 | - | | |

[a.] Old tag (0040,2006) is retired and not used

[b.] Old tag (0040,2007) is retired and not used

[c.] Uses universal sequence match

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| **Visit Status** | | | | | |
| Visit Status ID | (0038,0008) | 3 | - | | |
| Current Patient Location | (0038,0300) | 2 | x | | |
| Patient's Institution Residence | (0038,0400) | 3 | - | | |
| Visit Comments | (0038,4000) | 3 | - | | |
| **Visit Relationship** | | | | | |
| Referenced Study Sequence[a] | (0008,1110) | 3 | - | | |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |
| Referenced Patient Sequence[a] | (0008,1120) | 2 | - | | (0008,1120) |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |
| **Visit Admission** | | | | | |
| Referring Physician's Name | (0008,0090) | 2 | x | (0008,0090) | |
| Referring Physician's Address | (0008,0092) | 3 | - | | |
| Referring Physician's Phone Numbers | (0008,0094) | 3 | - | | |
| Admitting Diagnoses Description | (0008,1080) | 3 | x | (0008,1080) | |
| Admitting Diagnosis Code Sequence[a] | (0008,1084) | 3 | | | |
| >Code Value | (0008,0100) | 1C | | | |
| >Code Scheme Designator | (0008,0102) | 1C | | | |
| >Code Scheme Version | (0008,0103) | 3 | | | |
| >Code Meaning | (0008,0104) | 3 | | | |
| Route of Admissions | (0038,0016) | 3 | - | | |
| Admitting Date | (0038,0020) | 3 | - | | |
| Admitting Time | (0038,0021) | 3 | - | | |

a. Uses universal sequence match

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| **Patient Identification** | | | | | |
| Patient's Name | (0010,0010) | 1 | x | (0010,0010) | (0010,0010) |
| Patient ID | (0010,0020) | 1 | x | (0010,0020) | (0010,0020) |
| Issuer of Patient ID | (0010,0021) | 3 | - | (0010,0021) | |
| Other Patient IDs | (0010,1000) | 3 | x | (0010,1000) | |
| Other Patient IDs Sequence | (0010,1002) | 3 | x | (0010,1002) | |
| >Patient ID | (0010,0020) | 3 | x | (0010,0020) | |
| >Issuer of Patient ID | (0010,0021) | 3 | x | (0010,0021) | |
| >Type of Patient ID | (0010,0022) | 3 | x | (0010,0022) | |
| Other Patient Names | (0010,1001) | 3 | x | (0010,1001) | |
| Patient's Birth Name | (0010,1005) | 3 | - | (0010,1005) | |
| Patient's Mother's Birth Name | (0010,1060) | 3 | - | (0010,1060) | |
| Medical Record Locator | (0010,1090) | 3 | - | (0010,1090) | |
| **Patient Demographic** | | | | | |
| Patients Birth Date | (0010,0030) | 2 | x | (0010,0030) | (0010,0030) |
| Patients Birth Time | (0010,0032) | 3 | - | (0010,0032) | |
| Patient's Sex | (0010,0040) | 2 | x | (0010,0040) | (0010,0040) |
| Patient's Insurance Plan Code Sequence[a] | (0010,1050) | 3 | - | (0010,1050) | |
| >Code Value | (0008,0100) | 1C | | | |
| >Code Scheme Designator | (0008,0102) | 1C | | | |
| >Code Scheme Version | (0008,0103) | 3 | | | |
| >Code Meaning | (0008,0104) | 3 | | | |
| Patient's Age | (0010,1010) | 3 | x | (0010,1010) | |
| Patient's Size | (0010,1020) | 3 | x | (0010,1020) | |
| Patient's Weight | (0010,1030) | 2 | x | (0010,1030) | |
| Patient's Address | (0010,1040) | 3 | x | (0010,1040) | |
| Military Rank | (0010,1080) | 3 | x | (0010,1080) | |
| Branch of Service | (0010,1081) | 3 | - | (0010,1081) | |
| Country of Residence | (0010,2150) | 3 | - | (0010,2150) | |
| Region of Residence | (0010,2152) | 3 | - | (0010,2152) | |

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| Patient's Telephone Numbers | (0010,2154) | 3 | - | (0010,2154) | |
| Ethnic Group | (0010,2160) | 3 | x | (0010,2160) | |
| Occupation | (0010,2180) | 3 | - | (0010,2180) | |

[a.] Uses universal sequence match

| Attribute name | Tag | Return Key Type | UI | IOD | MPPS |
|---|---|---|---|---|---|
| Patient's Religious Preference | (0010,21F0) | 3 | - | (0010,21F0) | |
| Patient Comments | (0010,4000) | 3 | x | (0010,4000) | |
| Patient Data Confidentality Constraint Description | (0040,3001) | 2 | x | (0040,3001) | |
| **Patient Medical** | | | | | |
| Medical Alerts | (0010,2000) | 2 | x | (0010,2000) | |
| Contrast Allergies | (0010,2110) | 2 | x | (0010,2110) | |
| Pregnancy Status | (0010,21C0) | 2 | x | (0010,21C0) | |
| Smoking Status | (0010,21A0) | 3 | x | (0010,21A0) | |
| Last Menstrual Date | (0010,21D0) | 3 | x | (0010,21D0) | |
| Additional Patient History | (0010,21B0) | 3 | x | (0010,21B0) | |
| Special Needs | (0038,0050) | 2 | x | (0038,0050) | |
| Patient State | (0038,0500) | 2 | x | (0038,0500) | |
| **Patient Relationship** | | | | | |
| Referenced Study Sequence[a] | (0008,1110) | 3 | - | | |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |
| Referenced Visit Sequence[a] | (0008,1125) | 3 | - | | |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |
| Referenced Patient Alias Sequence[a] | (0038,0004) | 3 | - | | |
| >Referenced SOP Class UID | (0008,1150) | 1C | - | | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | - | | |

[a.] Uses universal sequence match

### *Associated Real-World Activity - Get Worklist*

Using "Get Worklist" in the patient-based Worklist Query dialog, the entered attributes are used to form a worklist request identifier. The Patient Registration dialog is updated with the response data to perform an examination in advance. The response data is additionally placed in the scheduler database.

### *Proposed Presentation Contexts - Get Worklist*

The same Presentation contexts are proposed as with "Update Worklist". Refer to table *Proposed presentation contexts* →A2-103.

### *SOP-Specific Conformance - Get Worklist*

**Search Key Attributes of the Worklist C-FIND**

The Somaris/7 DICOM worklist SCU supports "narrow worklist queries" with all the required search keys.

The following table describes the search keys that the SCU supports for a patient based worklist query, which is defined by the following search keys:

Search Key Attributes in a patient-based worklist query

| Attribute name | Tag | Matching Key Type | Query value |
|---|---|---|---|
| **Scheduled Procedure Step** | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | R | |
| >Scheduled Performing Physician's Name | (0040,0006) | R | inserted in UI or zero length |
| **Requested Procedure** | | | |
| Requested Procedure ID | (0040,1001) | O | inserted in UI or zero length |
| **Imaging Service Request** | | | |
| Accession Number | (0008,0050) | O | inserted in UI or zero length |
| Referring Physician's Name | (0008,0090) | O | inserted in UI or zero length |
| **Visit Status** | | | |
| Current Patient Location | (0038,0300) | O | inserted in UI or zero length |
| Patient Identification | | | |
| Patient's Name[a] | (0010,0010) | R | inserted in UI or zero length |
| Patient ID | (0010,0020) | R | inserted in UI or zero length |

a. Please be aware that, although in the UI there are different entries for First Name and Last Name of a patient, these are combined into one query attribute. Querying just for the Last Name (without wildcards) or not providing a first letter for the First Name may prevent expected matches.

### Return Key Attributes used from the Worklist C-FIND-RSP

Refer to *Basic Worklist C_FIND_RSP Return Key Attributes* →A2-106.

### Status Codes of the Worklist C-FIND

The worklist SCU interprets the following status codes:

C-FIND Response Status

| Service Status | Meaning | Status Codes (0000,0900) | Related Fields |
|---|---|---|---|
| Refused | Out of Resources | A700 | (0000,0902) |
| Failed | Identifier does not match the SOP Class | A900 | (0000,0901)<br>(0000,0902) |
| | Unable to process | Cxxx | (0000,0901)<br>(0000,0902) |
| Cancel | Matching terminated due to Cancel request | FE00 | None |
| Success | Matching is complete - No final Identifier is supplied | 0000 | None |
| Pending | Matches are continuing - the Current Match is supplied and any Optional Keys are supported in the same manner as Required Keys | FF00 | Identifier |
| | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier | FF01 | Identifier |

## Modality Performed Procedure Step AE Specification

The Modality Performed Procedure Step SCU (Patient Registration and MPPS UI) provides information about a performed real-world Procedure to a remote SCP (Information System).

The SIEMENS Somaris/7 DICOM implementation provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCU:

SOP Classes as an SCU

| SOP Class Name | SOP Class UID |
|---|---|
| Modality Performed Procedure Step | 1.2.840.10008.3.1.2.3.3 |

## Association Establishment Policies

### General

The creation of an MPPS Instance is done automatically by the Somaris/7 DICOM application whenever a patient is registered for image acquisition through the Patient Registration dialog. Exception: In case of Emergency Patients, the MPPS is created only when the user explicitly sends a corresponding message from the MPPS user interface.

Further updates on the MPPS data can be done interactively from the related MPPS user interface. The MPPS "Complete" or "Discontinued" states can only be set from the user interface.

The default PDU size used is of 32 kB.

### Number of Associations

The Siemens DICOM application initiates one association at a time, to create or set MPPS instances.

### Asynchronous Nature

The Siemens DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

### Implementation Identifying Information

- Implementation Class UID 1.3.12.2.1107.5.1.4
- Implementation Version Name SIEMENS_S7VA62A

## Association Initiation Policy

The Somaris/7 DICOM Application Entity acts as a Service Class User (SCU) for the

Modality Performed Procedure Step Service Class (to notify an RIS about the status of a procedure while it is performed).

To do so, it will issue one of the following:

- N-CREATE DIMSE according to the CREATE Modality Performed Procedure Step SOP Instance operation
- N-SET DIMSE to update the contents and state of the MPPS according to the SET Modality Performed Procedure Step Information operation

### Real-World Activity

#### Associated Real-World Activity - Patient Registered

A patient is registered by the Patient Registration "Exam" action. The trigger to create a MPPS Instance is derived from this event. The related Instance is then immediately communicated to the configured RIS system. An association is established and the MPPS Instance is sent.

#### Proposed Presentation Contexts - Patient Registered

The Somaris/7 DICOM application proposes Presentation Contexts as shown in the following table:

Proposed presentation contexts

| Presentation Context Table | | Role | Extended Negotiation |
|---|---|---|---|
| | | SCU | None |
| **Abstract Syntax** | | **Transfer Syntax** | |
| **Name** | **UID** | **Name List** | **UID List** |
| Modality Performed Procedure Step | 1.2.840.10008.3.1.2.3.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

#### SOP-Specific Conformance Statement - Patient Registered

**Attributes used for the Performed Procedure Step N-CREATE**

The Siemens DICOM Modality Performed Procedure Step SCU informs the remote SCP of when the examination of a scheduled procedure step will be performed (that is, the patient is registered). The N-CREATE message is sent when the examination starts after the successful registration of patient data. The following table describes the supported attributes for an N-CREATE message.

Performed Procedure Step N-CREATE Attributes

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| **SOP Common** | | | |
| Specific Character Set | (0008,0005) | 1C | from MWL or created |
| **Performed Procedure Step Relationship** | | | |
| Scheduled Step Attribute Sequence | (0040,0270) | 1 | |
| >Study Instance UID | (0020,000D) | 1 | from MWL or created |
| >Referenced Study Sequence | (0008,1110) | 2 | from MWL or zero length |
| >>Referenced SOP Class UID | (0008,1150) | 1C | |
| >>Referenced SOP Instance UID | (0008,1155) | 1C | |
| >Accession Number | (0008,0050) | 2 | from MWL or user input |
| >Placer Order Number / Imaging Service Request | (0040,2016) | 3 | from MWL or zero length |
| >Filler Order Number / Imaging Service Request | (0040,2017) | 3 | from MWL or zero length |
| >Requested Procedure ID | (0040,1001) | 2 | from MWL or user input |
| >Requested Procedure Description | (0032,1060) | 2 | from MWL or zero length |
| >Scheduled Procedure Step ID | (0040,0009) | 2 | from MWL or zero length |
| >Scheduled Procedure Step Description | (0040,0007) | 2 | from MWL or zero length |
| >Scheduled Protocol Code Sequence | (0040,0008) | 2 | from MWL or zero length |
| >>Code Value | (0008,0100) | 1C | |
| >>Coding Scheme Designator | (0008,0102) | 1C | |
| >>Code Scheme Version | (0008,0103) | 3 | |
| >>Code Meaning | (0008,0104) | 3 | |
| Patient's Name | (0010,0010) | 2 | from MWL or user input |
| Patient ID | (0010,0020) | 2 | from MWL or user input or created |
| Patients Birth Date | (0010,0030) | 2 | from MWL or user input |
| Patient's Sex | (0010,0040) | 2 | from MWL or user input |
| Referenced Patient Sequence | (0008,1120) | 2 | from MWL or zero length |
| >Referenced SOP Class UID | (0008,1150) | 1C | |
| >Referenced SOP Instance UID | (0008,1155) | 1C | |
| **Performed Procedure Step Information** | | | |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| Performed Procedure Step ID | (0040,0253) | 1 | from SPS ID or created |
| Performed Station AE Title | (0040,0241) | 1 | own AE Title |
| Performed Station Name | (0040,0242) | 2 | own hostname |
| Performed Location | (0040,0243) | 2 | from SPS Location or zero length |
| Performed Procedure Step Start Date | (0040,0244) | 1 | created |
| Performed Procedure Step Start Time | (0040,0245) | 1 | created |
| Performed Procedure Step Status | (0040,0252) | 1 | IN PROGRESS |
| Performed Procedure Step Description | (0040,0254) | 2 | from SPS Description or zero length |
| Performed Procedure Type Description | (0040,0255) | 2 | zero length |
| Procedure Code Sequence | (0008,1032) | 2 | from Requested Procedure Code or zero length |
| >Code Value | (0008,0100) | 1C | |
| >Code Scheme Designator | (0008,0102) | 1C | |
| >Code Scheme Version | (0008,0103) | 3 | |
| >Code Meaning | (0008,0104) | 3 | |
| Performed Procedure Step End Date | (0040,0250) | 2 | zero length |
| Performed Procedure Step End Time | (0040,0251) | 2 | zero length |
| Exposure Dose Sequence[a] | (0040,030E) | 3 | |
| >Radiation Mode | (0018,115A) | 3 | |
| >KVp | (0018,0060) | 3 | |
| >XrayTubeCurrentInuA | (0018,8151) | 3 | |
| >Exposure Time | (0018,1150) | 3 | |
| >FilterType | (0018,1160) | 3 | |
| >FilterMaterial | (0018,7050) | 3 | |
| >CTDIVol[b] | (0018,9345) | 2C | |
| >CTDIPhantomTypeCodeSequence[b] | (0018,9346) | 3 | |
| >>Code Value | (0008,0100) | 1 | |
| >>Coding Scheme Designator | (0008,0102) | 1 | |
| >>Code Meaning[b] | (0008,0104) | 1 | |
| >Private Creator[b] | (0019,00xx) | | Value: SIEMENS CT DOSE |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| >DoseLengthProduct[b] | (0019,xx10) | | |
| >CommentsOnRadiationDose[b] | (0040,0310) | 3 | |
| >OrganDose[b] | (0040,0316) | 3 | |
| **Image Acquisition Results** | | | |
| Modality | (0008,0060) | 1 | CT |
| Study ID | (0020,0010) | 2 | from Requested Procedure ID or created |
| Performed Protocol Code Sequence | (0040,0260) | 2 | from Scheduled Protocol Code SQ or zero length |
| >Code Value | (0008,0100) | 1C | |
| >Code Scheme Designator | (0008,0102) | 1C | |
| >Code Scheme Version | (0008,0103) | 3 | |
| >Code Meaning | (0008,0104) | 3 | |
| Performed Series Sequence | (0040,0340) | 2 | |
| >Performing Physicians's Name | (0008,1050) | 2C | from MWL or user input |
| >Protocol Name | (0018,1030) | n/a | User-defined description of the conditions under which the Series was performed |
| >Operator's Name | (0008,1070) | 2C | user input |
| >Series Instance UID | (0020,000E) | 1C | created |
| >Series Description | (0008,103E) | 2C | zero length |
| >Retrieve AE Title | (0008,0054) | 2C | zero length |
| >Referenced Image Sequence | (0008,1140) | 2C | zero length |
| >Referenced Standalone SOP Instance Sequence | (0040,0220) | 2C | zero length |
| **Radiation Dose Module** | | | |
| DistanceSourceToDetector | (0018,1110) | 3 | created |
| DistanceSourceToEntrance | (0040,0306) | 3 | zero length |
| TotalNumberOfExposures | (0040,0301) | 3 | created |
| CommentsOnRadiationDose | (0040,0310) | 3 | created |
| Exposure Dose Sequence | (0040,030E) | 3 | created |
| **Billing And Material Management Code Module** | | | |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| Billing Supplies and Devices Sequence | (0040,0324) | 3 | created |
| Quantity Sequence | (0040,0293) | 3 | created |

[a.] This sequence added is not part of this module as per DICOM standard. Support for this sequence in this module is additional and does not conform to the DICOM standard.

[b.] As per the DICOM standard, this attribute is not part of the Exposure Dose Sequence.

### Status Codes of the Performed Procedure Step N-CREATE

The Performed Procedure Step SCU interprets the following status values:

N-SET Response Status

| Service Status | Meaning | Status Codes (0000,0900) |
|---|---|---|
| Failure | Processing Failure | 0110 |
| | No such attribute | 0105 |
| | Invalid attribute value | 0106 |
| | Duplicate SOP Instance | 0111 |
| | No such SOP Instance | 0112 |
| | No such SOP class | 0118 |
| | Class instance conflict | 0119 |
| | Missing attribute | 0120 |
| | Missing attribute value | 0121 |
| | Resource limitation | 0213 |
| Success | Successful Operation | 0000 |

#### *Associated Real-World Activity - UI Update*

The associated Real-World activity is to send examination information to an SCP by using the DICOM Modality Performed Procedure Step Service, either implicitly (examination) or explicitly (MPPS UI).

#### *Proposed Presentation Contexts - UI Update*

The same Presentation Contexts as in *Proposed presentation contexts* →A2-116 are proposed.

#### *SOP-Specific Conformance Statement - UI Update*

### Attributes used for the Performed Procedure Step N-SET

The Somaris/7 DICOM Performed Procedure Step SCU informs the remote SCP about the performed examination and its status. The N-SET message is sent once for each reconstruction of acquisition data with the status "IN_PROGRESS". The N-

SET message is sent after user input with the status "COMPLETED" or "DISCONTINUED". This is intended to be used when the examination is finished with status "COMPLETED", or when the examination could not be completed with status "DISCONTINUED" (already sent automatically when the examination is ended via End Exam and no acquisition was done). The following table describes the attributes supported for an N-SET message.

Performed Procedure Step N-SET Attributes

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| **Performed Procedure Step Information** | | | |
| Performed Procedure Step Status | (0040,0252) | 3 | IN_PROGRESS or COMPLETED or DISCONTINUED (see above) |
| Performed Procedure Step Description | (0040,0254) | 3 | from SPS Description or user input |
| Performed Procedure Type Description | (0040,0255) | 3 | zero length |
| Procedure Code Sequence | (0008,1032) | 3 | from Requested Procedure Code or empty on user change (see IHE Technical Framework Y3, App. C Note 6) |
| >Code Value | (0008,0100) | 1C | |
| >Code Scheme Designator | (0008,0102) | 1C | |
| >Code Scheme Version | (0008,0103) | 3 | |
| >Code Meaning | (0008,0104) | 3 | |
| Performed Procedure Step End Date | (0040,0250) | 1 | created |
| Performed Procedure Step End Time | (0040,0251) | 1 | created |
| Exposure Dose Sequence[a] | (0040,030E) | 3 | |
| >Radiation Mode | (0018,115A) | 3 | |
| >KVp | (0018,0060) | 3 | |
| >XrayTubeCurrentInuA | (0018,8151) | 3 | |
| >Exposure Time | (0018,1150) | 3 | |
| >FilterType | (0018,1160) | 3 | |
| >FilterMaterial | (0018,7050) | 3 | |
| >CommentsOnRadiationDose | (0040,0310) | 3 | |
| >OrganDose[b] | (0040,0316) | 3 | |
| **Image Acquisition Results** | | | |
| Performed Protocol Code Sequence | (0040,0260) | 3 | from Scheduled Protocol Code SQ or user input |
| >Code Value | (0008,0100) | 1C | |
| >Code Scheme Designator | (0008,0102) | 1C | |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| >Code Scheme Version | (0008,0103) | 1C | |
| >Code Meaning | (0008,0104) | 1C | |
| Performed Series Sequence | (0040,0340) | 1 | |
| >Performing Physicians's Name | (0008,1050) | 2C | from MWL or user input [empty if Study Split is used] |
| >Protocol Name | (0018,1030) | 1C | name of Scan Protocol (Siemens standard or user defined) [dummy if Study Split is used] |
| >Operator's Name | (0008,1070) | 2C | user input [empty if Study Split is used] |
| >Series Instance UID | (0020,000E) | 1C | created [dummy if Study Split is used] |
| >Series Description | (0008,103E) | 2C | range name with generated reconstruction information or user input [empty if Study Split is used] |
| >Retrieve AE Title | (0008,0054) | 2C | from Storage Commitment RSP or zero length |
| >Referenced Image Sequence | (0008,1140) | 2C | created [empty if Study Split is used] |
| >>Referenced SOP Class UID | (0008,1150) | 1C | |
| >>Referenced SOP Instance UID | (0008,1155) | 1C | |
| >Referenced Standalone SOP Instance Sequence | (0040,0220) | 2C | zero length |
| **Radiation Dose** | | | |
| Total Number of Exposures | (0040,0301) | 3 | created<br>(number of scans) |
| Distance Source to Detector (SID) | (0018,1110) | 3 | created |
| Distance Source to Entrance | (0040,0306) | 3 | created |
| Comments on Radiation Dose | (0040,0310) | 3 | created<br>(one line per scan)[C] |
| Exposure Dose Sequence | (0040,030E) | 3 | created |
| >Radiation Mode | (0018,115A) | 3 | created |
| >KVP | (0018,0060) | 3 | created |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| >X-ray Tube Current in uA | (0018,8151) | 3 | created |
| >Exposure Time | (0018,1150) | 3 | created |
| >Filter Type | (0018,1160) | 3 | "WEDGE_2" "WEDGE_3" "WEDGE_2_3" "SN_DE" "FLAT",,"AU_DESF","SN_DESF","AUSN_DESF" or combinitions of "WEDGE_*" and "SN_DE" |
| >CTDIvol[b] | (0018,9345) | 3 | created |
| >CTDI Phantom Type Code Sequence[b] | (0018,9346) | 3 | created |
| >>Code Value[b] | (0008,0100) | 1 | |
| >>Coding Scheme Designator[b] | (0008,0102) | 1 | |
| >>Code Meaning[b] | (0008,0104) | 1 | |
| >Private[b] | (0019,00xx) | | "SIEMENS CT DOSE" |
| >Dose Length Product[b] | (0019,xx10) | | |
| >Comments on Radiation Dose | (0040,0310) | 3 | e.g.: Topogram: kV=120 mAs=95 CTDIvol=0.13 DLP=3 Phantom-Type=32cm |
| **Billing and Material Management Code** | | | |
| Film Consumption Sequence | (0040,0321) | 3 | created or zero length |
| >Number of Films | (2100,0170) | 3 | |
| >Medium Type | (2000,0030) | 3 | |
| >Film Size ID | (2010,0050) | 3 | |
| Billing Supplies and Devices Sequence | (0040,0324) | 3 | user input in Examination Card (example values below) or MPPS window |
| >Billing Item Sequence | (0040,0296) | 3 | |
| >>Code Value | (0008,0100) | 1C | for example contrast media code |
| >>Code Scheme Designator | (0008,0102) | 1C | for example contrast media catalog |

| Attribute name | Tag | Required Type | Value |
|---|---|---|---|
| >>Code Meaning | (0008,0104) | 1C | for example contrast media name |
| >Quantity Sequence | (0040,0293) | 1C | |
| >>Quantity | (0040,0294) | 3 | for example volume of contrast media |
| >>Measuring Units Sequence | (0040,0295) | 3 | |
| >>>Code Value | (0008,0100) | 1C | for example $cm^3$ |
| >>>Code Scheme Designator | (0008,0102) | 1C | for example UCUM |
| >>>Code Scheme Version | (0008,0103) | 1C | for example 1.4 |
| >>>Code Meaning | (0008,0104) | 1C | for example $cm^3$ |

[a.] This sequence added is not part of this module as per DICOM standard. Support for this sequence in this module is additional and does not conform to the DICOM Standard.

[b.] As per the DICOM standard, this attribute is not part of the Exposure Dose Sequence.

[c.] The following format is used:
RangeName: kV = xxx, mAs = xxx, $CTDI_{vol}$ = xx, DLP = xxx
DualTube: kV = xxx/yyy, mAs = xxx, $CTDI_{vo\ l}$ = xxx, DLP = xxx
$CTDI_{vol}$ and DLP is not provided for Topogram scans.

### Status Codes of the Performed Procedure Step N-SET

The Performed Procedure Step SCU interprets the following status values:

N-SET Response Status

| Service Status | Meaning | Status Codes (0000,0900) |
|---|---|---|
| Failure | Processing Failure: Performed Procedure Step Object may no longer be updated | 0110 |
| | No such attribute | 0105 |
| | Invalid attribute value | 0106 |
| | No such SOP Instance | 0112 |
| | Invalid object instance | 0117 |
| | No such SOP class | 0118 |
| | Class instance conflict | 0119 |
| | Missing attribute value | 0121 |
| | Resource limitation | 0213 |
| Success | MPPS instance set | 0000 |

# AE Specifications

# Extensions/Specifications/Privatizations

## Standard Extensions

### Standard Extensions of all SOP Classes

The following tables list the data dictionary of all the DICOM IOD attributes for which the DICOM standard definitions are extended:

Standard Extensions of all SOP Classes

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Image Type | (0008,0008) | - | 1 | See *Image Type* →A3-2 for further explanation.<br>Additional Defined Terms:<br>Defined Terms for value 3:<br>OTHER, MPR, PROJECTION IMAGE, UNDEFINED<br>Defined Terms for value 4:<br>CSA *[a], CT_SOM4 *, CT_SOM5 *[b], CT_SOM6 *, CT_SOM7 *, ECAT *, SHS *<br>Somaris/7-based SOMATOM products provide a value 5 with the Defined Terms:<br>ADD, CTL, FINISHED, IN_WORK, MRTD, OTOM, OTOP, PBF, PBV, PKET, PMON, STD, TTP, TTS, AVG, MIP, CBF, CBFI,CBFA, PEAK, CBV, CBVP,CBVA, BV, BVP, TTSA, MTTA, PMBP, RSQP,CSQP, RSDP,CSDP, ALP<br>Somaris/7-based SOMATOM products provide a value 6 with the Defined Terms:<br>DNRG, SNRG |
| | | | | Somaris/7-based SOMATOM products provide a value 7 with the Defined Terms:<br>DET_A, DET_B, DET_AB |
| | | | | Somaris/7-based SOMATOM products provide a value 8 with the Defined Terms:<br>IREC_PREVIEW |
| Patient Position | (0018,5100) | - | 2C | Additional Defined Terms for the Magnetom Open:<br>HLS, HLP, FLS, FLP, HLDL, HLDR, FLDL, FLDR |

Standard Extensions of all SOP Classes

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Body Part Examined | (0018,0015) | | 3 | Additional Defined Terms for the Somaris/7 based SOMATOM products:<br>SPINE, SPECIAL, UNKNOWN, SERVICE<br>See *Body Part Examined* →A3-8 for further explanation. |

[a.] For terms beginning with the stated prefix, for example, "CSA", and ending with "*", see *Image Type* →A3-2.

[b.] For private extensions, see *Private Elements for Storage SOP Classes* →A3-33.

All SOP classes may contain additional type 3 attributes which the DICOM standard defines in a different DICOM IOD or DICOM SOP class (attributes from Normalized SOP classes).

This is the case, for example, for:

- Rescale Slope (0028,1053)
- Rescale Intercept (0028,1052)

which are also used in the MR IOD.

### *Image Type*

The Image Type (0008,0008) attribute identifies important image identification characteristics. These characteristics are:

1. Pixel Data Characteristics:
   - Is the image an ORIGINAL Image: an image whose pixel values are based on original or source data, or
   - Is the image a DERIVED Image: an image whose pixel values have been derived in some manner from the pixel value of one or more other images.
2. Patient Examination Characteristics:
   - Is the image a PRIMARY Image: an image created as a direct result of the Patient examination, or
   - Is the image a SECONDARY Image: an image created after the initial Patient examination.
3. Modality Specific Characteristics (SOP Specific Characteristics).
4. Implementation-specific identifiers; other implementation-specific identifiers are documented in the implementation's conformance claim.

The Image Type attribute is multi-valued and is provided as follows:

- **Value 1** identifies the Pixel Data Characteristics; Enumerated Values for the Pixel Data Characteristics are:
  - ORIGINAL = Identifies an Original Image
  - DERIVED = Identifies a Derived Image
- **Value 2** identifies the Patient Examination Characteristics; Enumerated Values for the Patient Examination Characteristics are:
  - PRIMARY = Identifies a Primary Image
  - SECONDARY = Identifies a Secondary Image
- **Value 3** identifies any Image IOD-specific specialization. The following terms are defined in addition to the DICOM standard definitions:
  - OTHER = Converted non-Axial and non-Localizer CT images; images of no special type (new syntax)
  - UNDEFINED = Images of no special type (old syntax)
- **Value 4** is implementation-specific. The following terms are defined:
  - Original *syngo*-generated data set types:

    CSA 3D EDITOR = Object created by 3D Editor

    CSA 3D FLY PATH = Object created by Fly Through Path

    CSA 3D FLY VRT = Object created by Fly Through Volume Rendering Technique

    CSA 3D FUSION = Object created by Fusion

    CSA AVERAGE = Image created by Average

    CSA BLACK IMAGE = SC Image with black pixels; only graphics information is of interest

    CSA BOOKMARK = InSpace-generated SC image containing bookmark information

    CSA RESAMPLED = Derived image created by zooming or panning the original image

    CSA REPORT = *syngo* Reporting (documentation of diagnosis)

    CSA RESULT = *syngo* Reporting (post-processing results)

    CSA MIP = Image created by Maximum Intensity Projection

    CSA MIP THIN = Image created by Maximum Intensity Projection

    CSA MIP THIN CV = Image created by Maximum Intensity Projection (curved cut)

    CSA MPR = Image created by Multi-Planar Reconstruction

    CSA MPR CV = Image created by Multi-Planar Reconstruction (curved cut)

    CSA MPR THICK = Image created by Multi-Planar Reconstruction

    CSA MPR THICK CV = Image created by Multi-Planar Reconstruction (curved cut)

    CSA MPR THIN = Image created by Multi-Planar Reconstruction

CSA PSSD = SC Image as Perspective Shaded Surface Display
CSA SSD = SC Image as Shaded Surface Display
CSA SUBTRACT = Image created by Subtraction
CSA VRT = SC Image created by Volume Rendering Technique
ECAT ACF = CTI PET Attenuation Correction
ECAT NORMAL = CTI PET Normalization
ECAT 3D SINO = CTI PET 3D Sinogram Short
ECAT 3D SINO FLT = CTI PET 3D Sinogram Float

- Additional image types generated by Somaris/7- or Somaris/5-based SOMATOM products

CT_SOM7 PCT = PerfusionCT Image
CT_SOM5 AVE = Averaged Image
CT_SOM5 ICD = Interventional Cine Display Image
CT_SOM5 MON = Monitoring or Premonitoring Image
CT_SOM5 MUL = Multiscan Image
CT_SOM5 PAR = Parameter Image
CT_SOM5 PROT = Protocol Image
CT_SOM5 ROT = ROT Image
CT_SOM5 RTD = Real Time Display Image
CT_SOM5 RTD DUAL = Common Somaris/7 Dual Tube Real-Time Display Image
CT_SOM7 RTD DUAL = Specific Somaris/7 Dual Tube Real-Time Display Image
CT_SOM5 SEQ = Sequence Image
CT_SOM5 SEQ DUAL = Somaris/7 Dual Tube Sequence Image
CT_SOM5 SPI = Spiral Image
CT_SOM5 SPI DUAL = Somaris/7 Dual Tube Spiral Image
CT_SOM7 SPI DUAL = Specific Somaris/7 Dual Tube Spiral Image
CT_SOM5 SPO = Spiral Oblique Image
CT_SOM5 STA = Static Image
CT_SOM5 SUB = Subtracted Image
CT_SOM5 TOP = Topogram
CT_SOM5 DPAN = Dental Panorama Rebuilt Tomogram
CT_SOM5 DPAR = Dental Paraxial Rebuilt Tomogram
CT_SOM5 DFLM = Dental Filming Image
CT_SOM5 DYB = Dynamic Evaluation Averaged Baseline Image
CT_SOM5 DYF = Dynamic Evaluation Fused Multislice Image
CT_SOM5 PEVI = Pulmo Evaluation Image
CT_SOM5 OEVA = Osteo Evaluated Tomogram
CT_SOM5 MIP = Maximum Intensity Projection image created by a CT appli-

cation

CT_SOM5 MPR = Multi Planar Reconstruction image created by a CT application

CT_SOM5 REP = Lung Care Report Image

CT_SOM7 VPCT = Volume Perfusion CT

CT_SOM7 FLU = Fluoroscopic

- Converted images

  CT_SOM4 NONE = Converted SOMARIS image

  CT_SOM4 CONV = Converted SOMARIS Convolution Kernel file

  CT_SOM4 DART = Converted SOMARIS Dental Artificial image

  CT_SOM4 DEVA = Converted SOMARIS Dental Evaluation image

  CT_SOM4 DGRA = Converted SOMARIS Dental Graphics image

  CT_SOM4 DMEA = Converted SOMARIS Dynamic Measurement image

  CT_SOM4 DPAN = Converted SOMARIS Dental Panorama image

  CT_SOM4 DPAR = Converted SOMARIS Dental Paraxial image

  CT_SOM4 EBT = Converted SOMARIS Evolution image

  CT_SOM4 HIS = Converted SOMARIS Histogram Graphics image

  CT_SOM4 HISC = Converted SOMARIS Histogram Graphics image

  CT_SOM4 MUL = Converted SOMARIS Multiscan image

  CT_SOM4 OEVA = Converted SOMARIS Osteo Evaluation image

  CT_SOM4 OTOM = Converted SOMARIS Osteo Tomogram image

  CT_SOM4 OTOP = Converted SOMARIS Osteo Topogram image

  CT_SOM4 PLOT = Converted SOMARIS Plot image

  CT_SOM4 QUAL = Converted SOMARIS Quality image

  CT_SOM4 R2D = Converted SOMARIS 2D Rebuild image

  CT_SOM4 R3D = Converted SOMARIS 3D Rebuild image

  CT_SOM4 R3DE = Converted SOMARIS 3D Rebuild image

  CT_SOM4 RMAX = Converted SOMARIS Maximum Intensity Projection image

  CT_SOM4 RMIN = Converted SOMARIS Minimum Intensity Projection image

  CT_SOM4 ROT = Converted SOMARIS Rotation Mode image

  CT_SOM4 RRAD = Converted SOMARIS Radiographic Projection image

  CT_SOM4 RVIT = Converted SOMARIS Vessel Image Tool image

  CT_SOM4 RVRT = Converted SOMARIS Volumetric Rendering image

  CT_SOM4 SAVE = Converted SOMARIS Evolution Screen Save image

  CT_SOM4 SCAN = Converted SOMARIS Standard Mode image

  CT_SOM4 SEQ = Converted SOMARIS Sequence Mode image

  CT_SOM4 SER = Converted SOMARIS Serial Mode image

  CT_SOM4 SIN = Converted SOMARIS Sinogram image

  CT_SOM4 SINC = Converted SOMARIS Sinogram image

CT_SOM4 SPI = Converted SOMARIS Spiral Mode image
CT_SOM4 STA = Converted SOMARIS Static Mode image
CT_SOM4 TAB = Converted SOMARIS Correction Table image
CT_SOM4 TOP = Converted SOMARIS Topogram image
CT_SOM4 GTOP = Converted SOMARIS Topo Graphics image
CT_SOM4 PEVG = Converted SOMARIS Pulmo Evaluation image
CT_SOM4 PEVI = Converted SOMARIS Pulmo Evaluation image
CT_SOM4 PUL = Converted SOMARIS Pulmo Respiration curve
CT_SOM4 PROT = Converted SOMARIS Protocol image
CT_SOM4 TEXT = Converted SOMARIS Text image
CT_SOM4 ICD = Converted SOMARIS Interventional Cine image

SHS DENT = Converted MagicView Dental Tomogram image
SHS DPAN = Converted MagicView Dental Panorama image
SHS DPAR = Converted MagicView Dental Paraxial image
SHS 3D_CURVED = Converted MagicView image
SHS 3D_MIP = Converted MagicView Maximum Intensity Projection image
SHS 3D_MPR = Converted MagicView Multi Planar Reconstruction image
SHS 3D_SSD = Converted MagicView Shaded Surface Display image
SHS 3D_VRT = Converted MagicView Volumetric Rendering image

- **Value 5** is specific to the Somaris/7- or Somaris/5-based SOMATOM products. In special cases (3D post-processing), values mentioned for a lower index may appear for value 5 or higher. This refers to 3D post-processing base image types.
  The following terms are defined:
  - ADD = Additional Scan
  - ALP = Arterial Liver Perfusion
  - AVG = Average
  - BF = NeuroVPCT Blood Flow
  - BFI = NeuroVPCT Blood Flow - IncGamma
  - BV = NeuroVPCT Blood Volume
  - BVP = NeuroVPCT Blood Volume - Patlak
  - CBF = NeuroVPCT Blood Flow
  - CBFA = NeuroVPCT Blood Flow - Alternate
  - CBFI = NeuroVPCT Blood Flow - IncGamma
  - CBV = NeuroVPCT Blood Volume
  - CBVA = NeuroVPCT Blood Volume - Alternate
  - CBVP = NeuroVPCT Blood Volume - Patlak
  - CSQP = Patlak ChiSquare
  - CTL = Control Scan

- HPI = Hepatic Perfusion Index
- FINISHED = Lung Care Report Image (finished)
- IN_WORK = Lung Care Report Image (not finished)
- MIP = Maximum Intensity Projection
- MRTD = Multiscan Real Time Display Image
- MTTA = Mean Transit Time - Alternate
- OTOM = Osteo Scanned Tomogram
- OTOP = Osteo Scanned Topogram
- PBF = Perfusion Blood Flow Image
- PBV = Perfusion Blood Volume Image
- PKET = Peak Enhancement Parameter Image
- PMBA = Permeability - Alternate
- PMBP = Permeability
- PMON = Premonitoring Scan
- PEAK = NeuroVPCT Peak Enhancement
- PVP = Portal Venous Liver Perfusion
- RSDP = Patlak Residual
- RSQP = Patlak RSquare
- RT3D CONFIG = InSpace Configuration Image
- STD = Standard image of corresponding Type 4
- TTDA = Time-to-Drain - Alternate
- TTP = Time-to-Peak Parameter Image
- TTS = Time-to-Start Parameter Image
- TTSA = NeuroVPCT Time-to-Start Parameter Image
- VPCT MC*n*F*n* = Motion Corrected, Filtered

- **Value 6** is specific to the Somaris/7-based SOMATOM products. Dual Tube scans require a more detailed distinction.
  The following terms are defined:
  - DNRG = Dual Energy
  - SNRG = Single Energy
- **Value 7** is specific to the Somaris/7-based SOMATOM products. Dual Energy scans require a more detailed distinction.
  The following terms are defined:
  - DET_A = Only data of detector A used
  - DET_B = Only data of detector B used
  - DET_AB = Data is derived from detector A and detector B
- **Value 8** is specific to the Somaris/7-based SOMATOM products. Preview images of SAFIRE/ADMIRE Reconstructions require the following term to be defined:
  - IREC_PREVIEW

### Body Part Examined

The Body Part Examined (0018,0015) attribute provides a textual description of the part of the body that is being examined. The Somaris/7-based SOMATOM products extend the Defined Terms:

- SPINE = Summary term used instead of the Defined Terms CSPINE, TSPINE, LSPINE, and SSPINE
- SPECIAL = Image was acquired using acquisition modes that are not mapped to a certain part of the body
- SERVICE = Image was acquired for maintenance purposes
- UNKNOWN = No information about the body part is available

See *Specializations* →A3-15 for a mapping of the organ characteristics used for the examination to the Body Part Examined terms.

In addition, the user interface allows the user to define new terms. Therefore, any syntactically correct value may be present as a value of this attribute. However, it is recommended to use the DICOM defined terms when appropriate.

### RGB color images

The Somaris/7 DICOM application extends the CT Image IOD by using the RGB color image description with the unsigned integer, 24-bit color image plane pixel format:

- Samples per pixel (attribute 0028, 0002) = 3
- Photometric interpretation (attribute 0028,0004) = "RGB"
- Pixel representation (attribute 0028, 0103) = 0
- Bits allocated (attribute 0028, 0100) = 8
- Bits stored (attribute 0028,0101) = 8
- High bit (attribute 0028,0102) = 7
- Planar configuration (attribute 0028,0006) = 0.

This format is used for Functional Imaging, that is, images that meaningfully use all common CT Image attributes. However, the pixel values do not represent a scaled Hounsfield value but a different value (depending on the type of image). Thus, window-related attributes must not be used to interpret the pixel values as scaled HU values. The values used by Somaris/7 are:

- Window center (attribute 0028, 1050) = 128
- Window width (attribute 0028,1051) = 256
- Rescale intercept (attribute 0028, 1050) = 0
- Rescale slope (attribute 0028,1051) = 1

The following types of images may use this format:

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| Image Type Description | IOD | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 | Somaris/7 Image Text |
|---|---|---|---|---|---|---|---|
| Averaged Image | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 AVE | None | AVE |
| Parameter Image (Patlak Blood Volume) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKBV | PAR |
| Parameter Image (Peak enhancement) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKET | PAR |
| Parameter Image (Perfusion Blood Flow) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PBF | PAR |
| Parameter Image (Perfusion Blood Volume) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PBV | PAR |
| Parameter Image (Permeability) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PMB | PAR |
| Parameter Image (Time to Peak) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | TTP | PAR |
| Parameter Image (Time to Start) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | TTS | PAR |
| Parameter Image (Patlak Residual) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKER | PAR |
| Parameter Image (Patlak RSquare) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKR2 | PAR |
| Parameter Image (Arterial Liver Perfusion) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | ALP | PAR |
| Parameter Image (Portal Venous Liver Perfusion) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PVP | PAR |
| Parameter Image (Hepatic Perfusion Index) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | HPI | PAR |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| Image Type Description | IOD | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 | Somaris/7 Image Text |
|---|---|---|---|---|---|---|---|
| PerfusionCT Image (Maximum Intensity Projection) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | MIP | VPCT |
| PerfusionCT Image (Average) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | AVG | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Flow) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBF | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Flow - IncGamma) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBFI | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Flow - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBFA | VPCT |
| PerfusionCT Image (NeuroVPCT Not Motion Corrected, No Filter) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI,<br>CT_SOM5 SEQ,<br>CT_SOM5 MUL | VPCT MC0F0 | SPI,<br>SEQ,<br>MUL |
| PerfusionCT Image (NeuroVPCT, Motion Corrected, No Filter) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI,<br>CT_SOM5 SEQ,<br>CT_SOM5 MUL | VPCT MC1F0 | SPI,<br>SEQ,<br>MUL |
| PerfusionCT Image (NeuroVPCT Not Motion Corrected, Filtered) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI,<br>CT_SOM5 SEQ,<br>CT_SOM5 MUL | VPCT MC0F1 | SPI,<br>SEQ,<br>MUL |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| Image Type Description | IOD | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 | Somaris/7 Image Text |
|---|---|---|---|---|---|---|---|
| PerfusionCT Image (NeuroVPCT Motion Corrected, Filtered) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI,<br>CT_SOM5 SEQ,<br>CT_SOM5 MUL | VPCT MC1F1 | SPI,<br>SEQ,<br>MUL |
| PerfusionCT Image (BodyVPCT Blood Flow) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BF | VPCT |
| PerfusionCT Image (BodyVPCT Blood Flow - IncGamma) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BFI | VPCT |
| PerfusionCT Image (BodyVPCT Blood Flow - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BFA | VPCT |
| PerfusionCT Image (Peak enhancement) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | PEAK | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Volume) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBV | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Volume - Patlak) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBVP | VPCT |
| PerfusionCT Image (NeuroVPCT Blood Volume - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CBVA | VPCT |
| PerfusionCT Image (BodyVPCT Blood Volume) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BV | VPCT |
| PerfusionCT Image (BodyVPCT Blood Volume - Patlak) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BVP | VPCT |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| Image Type Description | IOD | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 | Somaris/7 Image Text |
|---|---|---|---|---|---|---|---|
| PerfusionCT Image (BodyVPCT Blood Volume - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | BVA | VPCT |
| PerfusionCT Image (BodyVPCT Not Motion Corrected, No Filter) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI, CT_SOM5 SEQ, CT_SOM5 MUL | VPCT MC0F0 | SPI, SEQ, MUL |
| PerfusionCT Image (BodyVPCT, Motion Corrected, No Filter) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI, CT_SOM5 SEQ, CT_SOM5 MUL | VPCT MC1F0 | SPI, SEQ, MUL |
| PerfusionCT Image (BodyVPCT Not Motion Corrected, Filtered) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI, CT_SOM5 SEQ, CT_SOM5 MUL | VPCT MC0F1 | SPI, SEQ, MUL |
| PerfusionCT Image (BodyVPCT Motion Corrected, Filtered) | CT | DERIVED | PRIMARY | AXIAL | CT_SOM5 SPI, CT_SOM5 SEQ, CT_SOM5 MUL | VPCT MC1F1 | SPI, SEQ, MUL |
| PerfusionCT Image (Time to Start) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | TTS | VPCT |
| PerfusionCT Image (Time to Start - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | TTSA | VPCT |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| Image Type Description | IOD | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 | Somaris/7 Image Text |
|---|---|---|---|---|---|---|---|
| PerfusionCT Image (Time to Peak) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | TTP | VPCT |
| PerfusionCT Image (Time To Drain Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | TTDA | VPCT |
| PerfusionCT Image (Mean Transit Time - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | MTTA | VPCT |
| PerfusionCT Image (Permeability) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | PMBP | VPCT |
| PerfusionCT Image (Permeability - Alternate) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | PMBA | VPCT |
| PerfusionCT Image (Patlak RSquare) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | RSQP | VPCT |
| PerfusionCT Image (Patlak ChiSquare) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | CSQP | VPCT |
| PerfusionCT Image (Patlak Residual) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | RSDP | VPCT |
| PerfusionCT Image (Arterial Liver Perfusion) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | ALP | VPCT |
| PerfusionCT Image (Portal Venous Liver Perfusion) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | PVP | VPCT |
| PerfusionCT Image (Hepatic Perfusion Index) | CT | DERIVED | SECONDARY | AXIAL, SAGITTAL, CORONAL | CT_SOM7 VPCT | HPI | VPCT |
| Screenshot Image | SC | DERIVED | SECONDARY | OTHER | VPCT | None | VPCT |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text** |
|---|---|---|---|---|---|---|---|
| Max Intensity Projection Image (Perfusion) | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 MIP | | MIP |
| LungCARE send-to-Filming images | CT | DERIVED | SECONDARY | OTHER | CSA MIP THIN | LC VALID WINDOW | MIP |
| LungCARE send-to-Filming images | CT | DERIVED | SECONDARY | OTHER | CSA MPR THICK | LC VALID WINDOW | MPR |
| LungCARE send-to-Filming images | CT | DERIVED | SECONDARY | OTHER | CSA VRT THIN | LC VALID WINDOW | VRT |
| LungCARE send-to-Filming images | CT | DERIVED | SECONDARY | OTHER | CSA PRVT | LC VALID WINDOW | PVRT |
| LungCARE send-to-Filming images | CT | DERIVED | SECONDARY | OTHER | CSA MPR | LC VALID WINDOW | MPR |

### *CT Images with Color Lookup Table*

Images derived from the Application Neuro PBV are created as CT Images with the Photometric Interpretation (0028,0004) set to "MONOCHROME2". Additionally, a Color Lookup Table is stored in the Private Header.

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Neuro PBV (Perfused Blood Volume) | CT | DERIVED | SECONDARY | AXIAL | NEUROPBV | None | None |
| Neuro PBV (Perfusion Weighted Map) | CT | DERIVED | SECONDARY | AXIAL | NEUROPM | None | None |

### Specializations

#### Images created by Somaris/7

The following table lists the Somaris/7 image types and the corresponding combinations of the Image Type Attribute values.

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| 3D MPR | SC | DERIVED | SECONDARY | LOCALIZER | CSA MPR | None | MPR |
| 3D MPR THICK | SC | DERIVED | SECONDARY | LOCALIZER | CSA MPR THICK | None | MPR THICK |
| 3D MIP | SC | DERIVED | SECONDARY | LOCALIZER | CSA MIP | None | MIP |
| 3D MIP THIN | SC | DERIVED | SECONDARY | LOCALIZER | CSA MIP THIN | None | MIP THIN |
| Averaged Image [Average, DynEva, Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 AVE | None | AVE |
| Interventional Cine Display Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 ICD | None | ICD |
| Monitoring Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 MON | None | MON |
| Premonitoring Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 MON | PMON | MON |
| Multiscan Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 MUL | None | MUL |
| Parameter Image (Arterial Liver Perfusion) [BodyPerfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | ALP | PAR |
| Parameter Image (Hepatic Perfusion Index) [BodyPerfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | HPI | PAR |
| Parameter Image (Portal Venous Liver Perfusion) [BodyPerfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PVP | PAR |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Protocol Image, Time Density Curve Image [BodyPerfusion][a] | SC | DERIVED | SECONDARY | OTHER | None | None | AC |
| Parameter Image (Patlak Blood Volume) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKBV | PAR |
| Parameter Image (Patlak Residual) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKER | PAR |
| Parameter Image (Patlak RSquare) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKR2 | PAR |
| Parameter Image (Peak enhance-ment) [DynEva, Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PKET | PAR |
| Parameter Image (Perfusion Blood Flow) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PBF | PAR |
| Parameter Image (Perfusion Blood Volume) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PBV | PAR |
| Parameter Image (Permeability) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | PMB | PAR |
| Parameter Image (Time to Peak) [DynEva, Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | TTP | PAR |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Parameter Image (Time to Start) [Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PAR | TTS | PAR |
| Protocol Image | SC | DERIVED | SECONDARY | OTHER | CT_SOM5 PROT | None | PROT (List only) |
| Report Image (not finished) | SC | DERIVED | SECONDARY | OTHER | CT_SOM5 REP | IN_WORK | REP |
| Report Image (finished) | SC | DERIVED | SECONDARY | OTHER | CT_SOM5 REP | FINISHED | REP |
| ROT Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 ROT | None | ROT |
| Real Time Display Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 RTD | None | RTD |
| Real Time Display Image (Dual Tube), Som5-compatible | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 RTD DUAL | STD | RTD DUAL |
| Real Time Display Image (Cardio) | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM7 RTD DUAL | STD | RTD DUAL |
| Multiscan Real Time Display Image | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 RTD | MRTD | RTD |
| Sequence Image | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SEQ | None | SEQ |
| Sequence Image (Dual Tube) | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SEQ DUAL | STD | SEQ DUAL |
| Additional Scan Image | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SEQ | ADD | SEQ |
| Control Scan Image | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SEQ | CTL | SEQ |
| Spiral Image | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SPI | None | SPI |
| Spiral Image (Dual Tube) | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SPI DUAL | STD | SPI DUAL |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Spiral Image (Cardio) | CT | ORIGINAL | PRIMARY / SECONDARY | AXIAL | CT_SOM7 SPI DUAL | STD | SPI DUAL |
| Spiral Oblique Image | CT | DERIVED | PRIMARY / SECONDARY | AXIAL | CT_SOM5 SPO | None | SPO |
| Static Image | CT | ORIGINAL | PRIMARY | OTHER | CT_SOM5 STA | None | STA |
| Subtracted Image | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 SUB | None | SUB |
| Topogram | CT | ORIGINAL | PRIMARY | LOCALIZER | CT_SOM5 TOP | None | TOP |
| Osteo Scanned Tomogram | CT | ORIGINAL | PRIMARY | AXIAL | CT_SOM5 SEQ | OTOM | SEQ |
| Osteo Scanned Topogram | CT | ORIGINAL | PRIMARY | LOCALIZER | CT_SOM5 TOP | OTOP | TOP |
| Osteo Evaluated Tomogram | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 OEVA | None | OEVA |
| Pulmo Evaluated Tomogram | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 PEVI | None | PEVI |
| Calcium Scoring Table [Calcium Scoring] | SC | DERIVED | SECONDARY | OTHER | CT_SOM5 TAB | None | TAB |
| Dental Filming Image | CT | DERIVED | SECONDARY | OTHER | CT_SOM5 DFLM | None | DFLM |
| Dental Panorama Rebuild Tomogram | CT | DERIVED | SECONDARY | OTHER | CT_SOM5 DPAN | None | DPAN |
| Dental Paraxial Rebuild Tomogram | CT | DERIVED | SECONDARY | OTHER | CT_SOM5 DPAR | None | DPAR |
| Dental/Volume Maximum Intensity Projection Image [Dental, Volume, DynEva, Perfusion] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 MIP | None | MIP |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Dental Panorama Reference Image [Dental, Volume] | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 MPR | None | MPR |
| Dental Paraxial Reference Image | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 MPR | None | MPR |
| Dental Reference Image | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 MPR | None | MPR |
| Dynamic Evaluation Averaged Baseline | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 DYB | None | DYB |
| Dynamic Evaluation Fused Multislice | CT | DERIVED | SECONDARY | AXIAL | CT_SOM5 DYF | None | DYF |
| Volume reformatted images (sagittal and coronal) | CT | DERIVED | SECONDARY | OTHER | CT_SOM5 MPR | None | MPR |
| Various result images [CalciumScoring, Colon] | CT | DERIVED | SECONDARY | AXIAL | CSA MPR | None | MPR |
| Various result images | CT | DERIVED | SECONDARY | AXIAL | CSA MPR THICK | None | MPR |
| Various result images | CT | DERIVED | SECONDARY | AXIAL | CSA MIP | None | MIP |
| Various result images [CalciumScoring] | CT | DERIVED | SECONDARY | AXIAL | CSA MIP THIN | None | MIP |
| Various result images [Colon] | SC | DERIVED | SECONDARY | OTHER | CSA PSSD | None | PSSD |
| Various result images | CT | DERIVED | SECONDARY | AXIAL | CSA VRT | None | VRT |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| Various result images [Colon] | SC | DERIVED | SECONDARY | OTHER | CSA VRT | None | VRT |
| InSpace bookmark [InSpace] | SC | DERIVED | SECONDARY | OTHER | CSA BOOKMARK | RT3D CONFIG | BOOK |
| InSpace result images [InSpace] | SC | DERIVED | SECONDARY | OTHER | CSA 3DPROJECTION | None | 3DPR |
| LungCARE save images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | MIP | LC VALID WINDOW | MIP |
| LungCARE save images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | MPR | LC VALID WINDOW | MPR |
| LungCARE save images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | VRT | LC VALID WINDOW | VRT |
| LungCARE save images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | PVRT | LC VALID WINDOW | PVRT |
| LungCARE save images [LungCARE] | CT | DERIVED | SECONDARY | OTHER | MPR | LC VALID WINDOW | MPR |
| LungCARE save images [LungCARE] | CT | DERIVED | SECONDARY | OTHER | CT_SOM5 SPI | LC VALID WINDOW | SPI |
| LungCARE report images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | MIP | LC VALID WINDOW | None |
| LungCARE report images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | MPR | LC VALID WINDOW | None |

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| LungCARE report images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | VRT | LC VALID WINDOW | None |
| LungCARE report images [LungCARE] | SC | DERIVED | SECONDARY | OTHER | PVRT | LC VALID WINDOW | None |
| Various Graphics [DynEva, Osteo, Pulmo, Volume, Perfusion, Argus] | SC | DERIVED | SECONDARY | OTHER | CSA BLACK IMAGE | None | None |
| Dual Energy Mixed Series [Dual Energy] | SC | ORIGINAL | SECONDARY | AXIAL | CT_SOM5 SPI DUAL | STD | None |

[a.] More detailed attribute information will be provided in a future version.

**Structured Reports**

Some applications creates Structured Reports. However, when running in specific (service configured) settings outside of the system, they appear as an SC image, labeled as Type 3 "OTHER" and Type 4 "CSA REPORT". This private extension is not published in detail here, as the intended use is real DICOM SR.

**CT Perfusion Maps**

The following CT Perfusion maps contain a blow-up factor in a private section of the DICOM header. This should taken in consideration in quantitative evaluations on systems other than those based on *syngo*.classic (e.g. PACs, *syngo*.via).

- All blood volume maps: CBV, CBV(A), CBV(P), Extravascular Volume (MDC), BV (MDC)

- All maps containing time information: TTS, TTS(A), TTP, TTP(MDC), TTD, MTT, Tissue Transit Time

- Patlak Residuals

### Structured Reports created by Somaris/7

The following table lists the Somaris/7 image types and the corresponding combinations of the Image Type Attribute values.

Somaris/7 Image Type (0008,0008) for objects **created** by Somaris/7

| **Image Type Description** [known creating applications] | **IOD** | **0008,0008 Value 1** | **0008,0008 Value 2** | **0008,0008 Value 3** | **0008,0008 Value 4** | **0008,0008 Value 5** | **Somaris/7 Image Text or Lists** |
|---|---|---|---|---|---|---|---|
| LungCARE SR reports [LungCARE, Calcium Scoring, Circulation] | SR | ORIGINAL | PRIMARY | OTHER | CSA REPORT | None | None |
| CT Dose SR reports | SR | ORIGINAL | PRIMARY | OTHER | CSA REPORT | None | None |

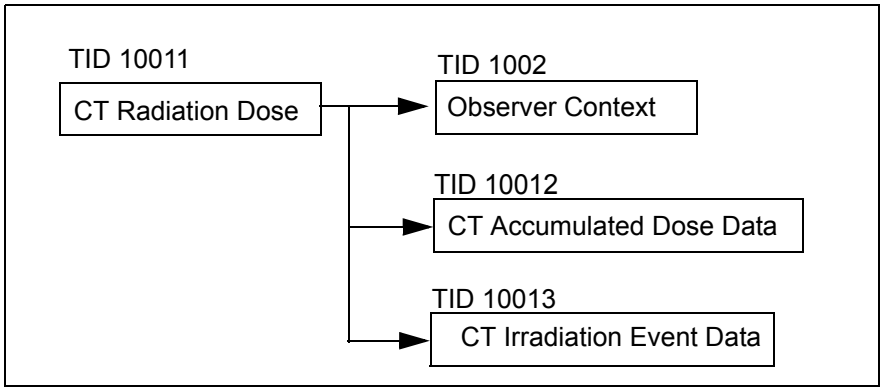
The LungCARE, Calcium Scoring and Circulation applications create Comprehensive Structured Reports.

The following is valid for Structured Reports created by Calcium Scoring:

The CaScoring application creates structured reports generally following the templates defined in the DICOM supplement 97 “CT/MR Cardiovascular Analysis Report” (Version: 0.11; Working Draft). There may be some some changes when the document is released in its final version and which could not be considered.The following is valid for Structured Reports created by Circulation:The Circulation application creates structured reports generally following the DICOM template TID 3900.

**CT Dose Report**

The CT Dose Report generally follows the templates defined in the DICOM Standard 2014b "CT Radiation Dose" (TID 10011), “CT Accumulated Dose Data” (TID 10012 , TID10013) and supports all mandatory elements.




### *Somaris/7 Attribute Interpretation*

For an overview of selected attribute filling for different Image Types, please refer to the *Annex*.

The table below explains how common attributes of created and uncompressed ORIGINAL and AXIAL images are set by Somaris/7 image reconstruction. This table does not intend to be a substitute for DICOM 3.0 attribute definitions. However, in addition to these definitions, it provides an impression of which attributes are in common use - and how these are related to Somaris/7 examinations:

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0002,0012 | Implementation Class UID | Value: 1.3.12.2.1107.5.1.4 |
| 0002,0013 | Implementation Version Name | Value: SIEMENS_S7VA62A |
| 0008,0005 | Specific Character Set | |
| 0008,0008 | Image Type | see *Images created by Somaris/7* →A3-15 |
| 0008,0016 | SOP Class UID | Value: 1.2.840.10008.5.1.4.1.1.2 |
| 0008,0018 | SOP Instance UID | Created |
| 0008,0020 | Study Date | The date and time entries of existing studies are copied into the corresponding entries in the header of a new image. |
| 0008,0030 | Study Time | If a new study is created, the date and time entries from the first series of this new study will be used. |
| 0008,0021 | Series Date | The date and time entries of existing series are copied into the corresponding entries in the header of a new image. |
| 0008,0031 | Series Time | If a new series is created, the current real-world date and time will be used. |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0008,0022 | Acquisition Date | Acquisition Date and Time are defined as the real-world start of the accumulation of data contributing to a particular image. As a result of multi-slice technology, several images may have the same Acquisition Date and Time. |
| 0008,0032 | Acquisition Time | |
| 0008,0023 | Image (Content) Date | For all images that result from the reconstruction of acquired data, the time stamp is the same as the Acquisition Date and Time. This is true for images that were reconstructed immediately after data acquisition, as well as for images that were reconstructed at any time later.<br>For all other images created by any other means, the time stamp is derived from a point in time during the creation process of these images. |
| 0008,0033 | Image (Content) Time | |
| 0008,0050 | Accession Number | Input is entered from MWL or during patient registration, and may have null length.<br>Note: When Study Split is used, the value corresponding to the Requested Procedure Description selected in the Exam UI is sent. |
| 0008,0060 | Modality | Value: CT |
| 0008,0070 | Manufacturer | Value: SIEMENS |
| 0008,0080 | Institution Name | Hospital name read from configuration data<br>or user input entered during patient registration or examination setup |
| 0008,0081 | Institution Address | Hospital address read from configuration data.<br>The default format is 4 lines consisting of Street, City, District and Country. |
| 0008,0090 | Referring Physician's Name | Input from MWL or entered during patient registration or examination setup; may have null length. |
| 0008,1010 | Station Name | Name of the computer controlling the examination |
| 0008,1030 | Study Description | Derived from information entered during patient registration or examination setup as the concatenation of the Body Region and the selected Scan Protocol name, separated by a "^"<br>Note: When Study Split is used, the Requested Procedure Description selected in the Exam UI will be sent. |
| 0008,1032 | ProcedureCodeSequence | Used for taskflow IDs received from syngo.via |
| >0008,0100 | CodeValue | TaskflowId Code received from syngo.via |
| >0008,0104 | CodeMeaning | TaskflowId Meaning received from syngo.via |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| >0008,0102 | MeaningCoding Scheme Designator | Fixed value: "99CT_VIA" |
| 0008,1050 | Performing Physician's Name | Input entered from MWL or during patient registration |
| 0008,1070 | Operator's Name | According to user input |
| 0008,1080 | Admitting Diagnoses Description | Input entered from MWL or during patient registration. |
| 0008,103E | Series Description | According to user input (system proposes <Range Name> <Slice Thickness> <Kernel>) |
| 0008,1090 | Manufacturer's Model Name | The Siemens product name |
| 0008,1140 | Referenced Image Sequence | |
| >0008,1150 | Referenced SOP Class UID | SOP Class UID of Topogram used for planning |
| >0008,1155 | Referenced SOP Instance UID | SOP Instance UID of Topogram used for planning |
| 0008,2112 | Source Image Sequence | |
| >0008,1150 | Referenced SOP Class UID | SOP Class UID of Raw data used for reconstruction |
| >0008,1155 | Referenced SOP Instance UID | SOP Instance UID of Raw data used for reconstruction |
| 0008,2111 | Derivation Description | Lossy Image Compression will be set to 01 for the Extended Field of View because of low image quality. Derivation Description: "Reconstruction field larger than scan field". |
| 0009,00xx | Private Creator | Value: SIEMENS CT VA1 DUMMY |
| 0010,0010 | Patient's Name | Input from MWL or entered during patient registration or examination setup |
| 0010,0020 | Patient ID | Input from MWL or entered or generated during patient registration or examination setup |
| 0010,0030 | Patient's Birth Date | Input from MWL or entered during patient registration or examination setup; may be calculated from age |
| 0010,0040 | Patient's Sex | Input from MWL or entered during patient registration or examination setup |
| 0010,1010 | Patient's Age | Input from MWL or entered during patient registration or examination setup; may be calculated from Patient's Birth Date |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0018,0010 | Contrast/Bolus Agent | If present:<br>The attribute is filled with the value entered in the contrast card. If nothing was entered, the attribute is filled with the fixed term "APPLIED". |
| 0018,0015 | Body Part Examined | The Body Part Examined attribute is derived from the organ characteristic of the scan or directly entered by the operator, overriding this default.<br>The organ characteristic parameter is contained in the scan protocol selected for examination during patient registration or examination setup, and may vary for different scans within one protocol (use System/Run/List Scan Protocols column "OrgChar" for a list of values for specific scan protocols).<br>**Organ Characteristic** — **Body Part Examined**<br>Head — HEAD<br>Neck — NECK<br>Shoulder — SHOULDER<br>Thorax — CHEST<br>Abdomen — ABDOMEN<br>Spine — SPINE<br>Pelvis — PELVIS<br>Extremities — EXTREMITY<br>Cardio — HEART<br>Service — SERVICE<br>n. a. — UNKNOWN |
| 0018,0022 | Scan Options | This field is used to store cardiac information. |
| 0018,0050 | Slice Thickness | Resulting slice thickness; not necessarily equal to collimated slice |
| 0018,0060 | KVP | Voltage selected for scan |
| 0018,0090 | Data Collection Diameter | The diameter in mm of the region over which data was collected |
| 0018,1000 | Device Serial Number | Serial number of the CT system's gantry |
| 0018,1020 | Software Version(s) | Software version of Somaris/7; only one value is used |
| 0018,1030 | Protocol Name | Name of Scan Protocol selected during patient registration or examination setup |
| 0018,1100 | Reconstruction Diameter | Field of View selected for reconstruction |
| 0018,1110 | Distance Source to Detector | |
| 0018,1111 | Distance Source to Patient | |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0018,1120 | Gantry/Detector Tilt | |
| 0018,1130 | Table Height | Table height as entered for scan |
| 0018,1140 | Rotation Direction | |
| 0018,1150 | Exposure Time | The exposure time for the respective image. For a spiral scan or multiscan, this corresponds to the rotation time. |
| 0018,1151 | X-ray Tube Current | Tube current used for scanning |
| 0018,1152 | Exposure | (Effective) mAs. For spiral images, the product of exposure time and x-ray tube current is corrected with Table Feed per Rotation. This attribute is expressed in mAs. |
| 0018,1160 | Filter Type | "WEDGE_2","WEDGE_3","WEDGE_2_3", "SN_DE","FLAT",”AU_DESF”,”SN_DESF”,”AUSN_DESF” or combinations of "WEDGE_*", "SN_DE" |
| 0018,1170 | Generator Power | |
| 0018,1190 | Focal Spots | Size of the focal spot actually used to generate x-ray radiation for a particular image.This is a single value expressed in mm. |
| 0018,1200 | Date of Last Calibration | Date of last Base Calibration |
| 0018,1201 | Time of Last Calibration | Time of last Base Calibration |
| 0018,1210 | Convolution Kernel | 4-character code of convolution kernel. In case SAFIRE/ADMIRE was used, the strength is written to the second value of this attribute. |
| 0018,5100 | Patient Position | As entered for scan |
| 0018,9306 | Single Collimation Width | As entered for scan |
| 0018,9307 | Total Collimation Width | As entered for scan |
| 0018,9309 | Table Speed | The distance in mm that the table moves in one second during the gathering of data that resulted in this image |
| 0018,9310 | Table Feed per Rotation | As entered for scan |
| 0018,9311 | CT Pitch Factor | As entered for scan |
| 0018,9313 | Data Collection Center (Patient) | Only filled when data is available or defined |
| 0018,9318 | Reconstruction Target Center (Patient) | Only filled when data is available |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0018,9323 | Exposure Modulation Type | A label describing the type of exposure modulation used for the purpose of limiting the dose:<br>**Defined Terms:**<br>DoseModulationType — DICOM Entry (string)<br>ZAxisExposureControl — Z_EC<br>OnlineControl — XY_EC<br>mAControl — FIX_EC<br>AutomaticExposureControl — XYZ_EC<br>DvModulation — PULS_EC<br>DvAdvanced — PULS_MINDOSE_EC<br>DvModulationZEC — PULS_EC<br>DvAdvancedZEC — PULS_MINDOSE_EC<br>DvModulationMAC — PULS_EC<br>DvAdvancedMAC — PULS_MINDOSE_EC<br>AngularTrigger — X_CARE_EC<br>AngularTriggerZEC — X_CARE_Z_EC<br>AngularTriggerMAC — X_CARE_FIX_EC<br>NoModulation — OFF |
| 0018,9324 | Estimated Dose Saving | Calculated by the system |
| 0018,9345 | CTDIvol | Calculated by the system |
| 0018,9346 | CTDIPhantomTypeCodeSequence | Calculated by the system |
| >0008,0100 | Code Value | Calculated by the system |
| >0008,0102 | Code Scheme Designator | Calculated by the system |
| >0008,0104 | Code Meaning | Calculated by the system |
| 0018,9351 | Calcium Scoring Mass Factor Patient | Calculated by the system |
| 0018,9352 | Calcium Scoring Mass Factor Device | Calculated by the system |
| 0018,9353 | Energy Weighting Factor | Weighting factor for primary system; only set if additional X-ray sources are used.<br>The value is as entered for the scan. |
| 0018,9360 | CT Additional X-Ray Source Sequence | Filled if a second X-ray source was used |
| >0018,0060 | > kVP | Voltage selected for scan |
| >0018,9330 | >X-Ray Tube Current in mA | Tube current used for scanning in milliamperes |
| >0018,0090 | >Data Collection Diameter | The diameter in mm of the region over which data was collected |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| >0018,1190 | >Focal Spot(s) | Size of the focal spot actually used to generate x-ray radiation for a particular image. This is a single value expressed in mm. |
| >0018,1160 | >Filter Type(s) | "WEDGE_2","WEDGE_3","WEDGE_2_3", "SN_DE","FLAT",”AU_DESF”,”SN_DESF”,”AUSN_DESF” or combinations of "WEDGE_*" and "SN_DE" |
| >0018,7050 | >Filter Material | Values: "TITANIUM","TIN" or combinations |
| >0018,9332 | >Exposure in mAs | (Effective) mAs. For spiral images, the product of exposure time and x-ray tube current is corrected with Table Feed per Rotation. This attribute is expressed in mAs. |
| >0018,9353 | >Energy Weighting Factor | Weighting factor for secondary system. If the weighting factor is the weighting as entered for the scan, this value is 1-wf. |
| 0019,00xx | Private Creator | Value: SIEMENS CT VA0  COAD |
| 0019,xxB0 | Feed per Rotation | Movement of table during one rotation in mm |
| 0020,000D | Study Instance UID | From MWL or created<br>Note: When Study Split is used, the value corresponding to the Requested Procedure Description selected in the Exam UI will be sent. |
| 0020,000E | Series Instance UID | From MWL or created |
| 0020,0010 | Study ID | From MWL or created<br>Note: When Study Split is used, the value corresponding to the Requested Procedure Description selected in the Exam UI will be sent. |
| 0020,0011 | Series Number | Created |
| 0020,0012 | Acquisition Number | Scan number within this examination |
| 0020,0013 | Instance Number | Created; direction within range selectable by user |
| 0020,0032 | Image Position (Patient) | The x, y, and z coordinates of the center of the first pixel, in mm |
| 0020,0037 | Image Orientation (Patient) | Calculated by the system |
| 0020,0052 | Frame of Reference UID | Created |
| 0020,1040 | Position Reference Indicator | Null length |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| 0020,1041 | Slice Location | Topogram: Slice Location is defined as the relative table position of the start of the Topogram image expressed in mm.<br>Tomogram: Slice Location is defined as the relative position of the intersection of the image slice with the z-axis expressed in mm.<br>This position is relative to the current reference point and corresponds to the table position. |
| 0020,4000 | Image Comments | According to user input; 2 lines supported |
| 0021,00xx | Private Creator | Value: SIEMENS MED |
| 0021,xx11 | Target | Center x/y as entered for reconstruction |
| 0028,0002 | Samples per Pixel | Value: 1 |
| 0028,0004 | Photometric Interpretation | Value: MONOCHROME2 |
| 0028,0010 | Rows | Image Rows |
| 0028,0011 | Columns | Image Colums |
| 0028,0030 | Pixel Spacing | Calculated from FOV and Rows/Columns |
| 0028,0100 | Bits Allocated | Value: 16 |
| 0028,0101 | Bits Stored | Value: 12 |
| 0028,0102 | High Bit | Value: 11 |
| 0028,0103 | Pixel Representation | Value: 0 |
| 0028,0106 | Smallest Image Pixel Value | Calculated by examination |
| 0028,0107 | Largest Image Pixel Value | Calculated by examination |
| 0028,1050 | Window Center | Last windowing center saved; first window followed by second window |
| 0028,1051 | Window Width | Last windowing width saved; first window followed by second window |
| 0028,1052 | Rescale Intercept | Value -1024 for images without extended CT scale |
| 0028,1053 | Rescale Slope | Value 1 for images without extended CT scale |
| 0028,1055 | Window Center & Width Explanation | Value: "WINDOW1", "WINDOW2" |
| 0028,2110 | Lossy Image Compression | Lossy Image Compression will be set to 01 for the Extended Field of View because of low image quality. Derivation Description: "Reconstruction field larger than scan field". |
| 0029,xxxx | (private data) | See *Privatizations* →A3-33 |
| 0029,xx40 | Application Header Sequence | See *Privatizations* →A3-33 |

Somaris/7 Attribute Interpretation

| Tag | Name | Explanation |
|---|---|---|
| >0029,00xx | Private Creator | "SIEMENS MEDCOM HEADER" |
| >0029,xx41 | Application Header Type | "SOM 5 TPOS" |
| >0029,xx42 | Application Header ID | "SOM 5 NULLPOSITION" |
| >0029,xx43 | Application Header Version | "VB10A 20030626" |
| >0029,xx44 | Application Header Info | Table Null Position coded as a null terminated character buffer |
| 0032,1060 | Requested Procedure Description | Input entered during patient registration or examination setup.<br>Note: When Study Split is used, the value corresponding to the Requested Procedure Description selected in the Exam UI will be sent |
| 0040,0260 | PerformedProtocolCodeSequence | Used for DataRoles received from *syngo*.via |
| >0040,0100 | CodeValue | DataRoleCode received from *syngo*.via |
| >0040,0104 | CodeMeaning | DataRole Meaning received from *syngo*.via |
| >0040,0102 | MeaningCoding Scheme Designator | Fixed value: "99CT_VIA" |
| 7FE0,0010 | Pixel Data | |

### *OOG, Overlays, High Bits*

Graphics in Somaris/7 images are stored as Object Oriented Graphics (OOG) in private attributes (see *MEDCOM OOG Module* →A3-40). Non- *syngo* based systems are not expected to interpret this information.

In order to allow display access to graphic information for DICOM-based systems, private OOG information is converted on export into DICOM Overlay information stored in group 6000. This is the recommended way for a DICOM-based system to access overlay graphics information.

The following attibutes are generated:

Overlay Rows (6000,0010)

Overlay Columns (6000,0011)

Number of Frames in Overlay (6000,0015)

Overlay Description (6000,0022) = "Siemens MedCom Object Graphics"

Overlay Type (6000,0040) = "G"

Origin (6000,0050) = 1, 1

Image Frame Origin (6000,0051)

Overlay Bits Allocated (6000,0100)

Bit Position (6000,0102)

Overlay Data (6000,3000)

However, DICOM Overlay information stored in group 6000 is not supported by all systems that might be used to store Somaris/7 images. These systems may not be able to display Somaris/7-generated overlays. For a special group of these systems, there is another way to provide graphical overlay information. A remote node can be configured to convert overlay graphics into unused pixel data above the High Bit (0028,0102) for images that fulfil the following conditions:

- Bits allocated (attribute 0028, 0100) = 16
- Bits stored (attribute 0028,0101) = 12
- High bit (attribute 0028,0102) = 11

Some systems are known to support this coding and are able to display this information with the images. Please note, however, that the proper and recommended way to store overlays with DICOM is using the group 6000.

## Privatizations

### Private Elements for Storage SOP Classes

The following private attributes are defined for all Siemens *syngo*-based applications.

#### Registry of DICOM Data Elements

| Tag | Private Owner Code | Name | VR | VM |
|---|---|---|---|---|
| (0029,xx08) | SIEMENS CSA HEADER | CSA Image Header Type | CS | 1 |
| (0029,xx09) | SIEMENS CSA HEADER | CSA Image Header Version | LO | 1 |
| (0029,xx10) | SIEMENS CSA HEADER | CSA Image Header Info | OB | 1 |
| (0029,xx18) | SIEMENS CSA HEADER | CSA Series Header Type | CS | 1 |
| (0029,xx19) | SIEMENS CSA HEADER | CSA Series Header Version | LO | 1 |
| (0029,xx20) | SIEMENS CSA HEADER | CSA Series Header Info | OB | 1 |
| (0029,xx08) | SIEMENS CSA NON-IMAGE | CSA Data Type | CS | 1 |
| (0029,xx09) | SIEMENS CSA NON-IMAGE | CSA Data Version | LO | 1 |
| (0029,xx10) | SIEMENS CSA NON-IMAGE | CSA Data Info | OB | 1 |
| (0029,xx08) | SIEMENS CSA REPORT | *syngo* Report Type | CS | 1 |
| (0029,xx09) | SIEMENS CSA REPORT | *syngo* Report | LO | 1 |
| (0029,xx15) | SIEMENS CSA REPORT | SR Variant | US | 1 |
| (0029,xx17) | SIEMENS CSA REPORT | SC SOP Instance UID | UI | 1 |
| (0029,xx10) | SIEMENS CSA ENVELOPE | syngo Report Data | OB | 1 |
| (0029,xx11) | SIEMENS CSA ENVELOPE | syngo Report Presentation | OB | 1 |
| (0029,xx08) | SIEMENS MEDCOM HEADER | MedCom Header Type | CS | 1 |
| (0029,xx09) | SIEMENS MEDCOM HEADER | MedCom Header Version | LO | 1 |
| (0029,xx10) | SIEMENS MEDCOM HEADER | MedCom Header Info | OB | 1 |
| (0029,xx20) | SIEMENS MEDCOM HEADER | MedCom History Information | OB | 1 |
| (0029,xx31) | SIEMENS MEDCOM HEADER | PMTF Information 1 | LO | 1 |
| (0029,xx32) | SIEMENS MEDCOM HEADER | PMTF Information 2 | UL | 1 |
| (0029,xx33) | SIEMENS MEDCOM HEADER | PMTF Information 3 | UL | 1 |
| (0029,xx34) | SIEMENS MEDCOM HEADER | PMTF Information 4 | CS | 1 |
| (0029,xx35) | SIEMENS MEDCOM HEADER | PMTF Information 5 | UL | 1 |

| Tag | Private Owner Code | Name | VR | VM |
|---|---|---|---|---|
| (0029,xx40) | SIEMENS MEDCOM HEADER | Application Header Sequence | SQ | 1 |
| (0029,xx41) | SIEMENS MEDCOM HEADER | Application Header Type | CS | 1 |
| (0029,xx42) | SIEMENS MEDCOM HEADER | Application Header ID | LO | 1 |
| (0029,xx43) | SIEMENS MEDCOM HEADER | Application Header Version | LO | 1 |
| (0029,xx44) | SIEMENS MEDCOM HEADER | Application Header Info | OB | 1 |
| (0029,xx50) | SIEMENS MEDCOM HEADER | Workflow Control Flags | LO | 8 |
| (0029,xx51) | SIEMENS MEDCOM HEADER | Archive Management Flag Keep Online | CS | 1 |
| (0029,xx52) | SIEMENS MEDCOM HEAD | Archive Management Flag Do Not Archive | CS | 1 |
| (0029,xx53) | SIEMENS MEDCOM HEADER | Image Location Status | CS | 1 |
| (0029,xx54) | SIEMENS MEDCOM HEADER | Estimated Retrieve Time | DS | 1 |
| (0029,xx55) | SIEMENS MEDCOM HEADER | Data Size of Retrieved Images | DS | 1 |
| (0029,xx70) | SIEMENS MEDCOM HEADER | Siemens Link Sequence | SQ | 1 |
| (0029,xx71) | SIEMENS MEDCOM HEADER | Referenced Tag | AT | 1 |
| (0029,xx72) | SIEMENS MEDCOM HEADER | Referenced Tag Type | CS | 1 |
| (0029,xx73) | SIEMENS MEDCOM HEADER | Referenced Value Length | UL | 1 |
| (0029,xx74) | SIEMENS MEDCOM HEADER | Referenced Object Device Type | CS | 1 |
| (0029,xx75) | SIEMENS MEDCOM HEADER | Referenced Object Device Location | OB | 1 |
| (0029,xx76) | SIEMENS MEDCOM HEADER | Referenced Object ID | OB | 1 |
| (0029,xx60) | SIEMENS MEDCOM HEADER2 | Series Work Flow Status | LO | 1 |
| (0029,xx08) | SIEMENS MEDCOM OOG | MEDCOM OOG Type | CS | 1 |
| (0029,xx09) | SIEMENS MEDCOM OOG | MEDCOM OOG Version | LO | 1 |
| (0029,xx10) | SIEMENS MEDCOM OOG | MEDCOM OOG Info | OB | 1 |
| (7FE1,xx10) | SIEMENS CSA NON-IMAGE | CSA Data | OB | 1 |

The following sub-sections explain in which IODs these private data elements are used.

### All syngo-Supported Image SOP Classes

#### Extended Image IOD Module Table

CSA Image IOD Modules

| IE | Module | Reference | Usage | Note |
|---|---|---|---|---|
| Patient | Patient | [1] PS 3.3 C.7.1.1 | M | |
| Study | General Study | [1] PS 3.3 C.7.2.1 | M | |
| | Patient Study | [1] PS 3.3 C.7.2.2 | U | |
| Series | General Series | [1] PS 3.3 C.7.3.1 | M | |
| Equipment | General Equipment | [1] PS 3.3 C.7.5.1 | U | |
| Image | General Image | [1] PS 3.3 C.7.6.1 | M | |
| | Image Pixel | [1] PS 3.3 C.7.6.3 | M | |
| | IOD specific modules | [1] PS 3.3 C.8.2.1 | M/U | Depends on the IOD |
| | CSA Image Header | *CSA Image Header Module* →A3-35 | U | |
| | CSA Series Header | *CSA Series Header Module* →A3-36 | U | |
| | MEDCOM Header | *MEDCOM Header Module* →A3-36 | U | Private *syngo* information |
| | MEDCOM OOG | *MEDCOM OOG Module* →A3-40 | U | If object graphics are attached to image |
| | SOP Common | [1] PS 3.3 C.12.1 | M | |

#### CSA Image Header Module

The table in this section contains private IOD Attributes that describe the CSA Image Header.

CSA Image Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| CSA Image Header Type | (0029,xx08) | SIEMENS CSA HEADER | 1 | CSA Image Header identification characteristics.<br>Defined Terms:<br>NUM 4 = NUMARIS/4<br>SOM 5 = Somaris/5 or Somaris/7 |

CSA Image Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| CSA Image Header Version | (0029,xx09) | SIEMENS CSA HEADER | 3 | Version of CSA Image Header Info (0029,xx10) format. |
| CSA Image Header Info | (0029,xx10) | SIEMENS CSA HEADER | 3 | Manufacturer model-dependent information. |

### *CSA Series Header Module*

The table in this section contains private IOD Attributes that describe the CSA Series Header.

CSA Series Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| CSA Series Header Type | (0029,xx18) | SIEMENS CSA HEADER | 1 | CSA Series Header identification characteristics.<br>Defined Terms:<br>NUM 4 = NUMARIS/4<br>SOM 5 = Somaris/5 |
| CSA Series Header Version | (0029,xx19) | SIEMENS CSA HEADER | 3 | Version of CSA Series Header Info (0029,xx20) format. |
| CSA Series Header Info | (0029,xx20) | SIEMENS CSA HEADER | 3 | Manufacturer model-dependent information. |

### *MEDCOM Header Module*

The table in this section contains private IOD Attributes that describe the MEDCOM Header.

MEDCOM Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| MedCom Header Type | (0029,xx08) | SIEMENS MEDCOM HEADER | 1C | MedCom Header identification characteristics.<br>Defined Terms:<br>MEDCOM 1<br>Required if MedCom Header Info (0029,xx10) is present. |
| MedCom Header Version | (0029,xx09) | SIEMENS MEDCOM HEADER | 2C | Version of MedCom Header Info (0029,xx10) format.<br>Required if MEDCOM Header Info (0029,xx10) is present. |

MEDCOM Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| MedCom Header Info | (0029,xx10) | SIEMENS MEDCOM HEADER | 3 | Manufacturer model-dependent information.<br>The value of the MedCom Header Info attribute (0029,xx10) can be built up in each user-defined format. |
| MedCom History Information | (0029,xx20) | SIEMENS MEDCOM HEADER | 3 | MedCom-defined Patient Registration history information. See *MEDCOM History Information* →A3-40. |
| PMTF Information 1 | (0029,xx31) | SIEMENS MEDCOM HEADER | 3 | Transformation Information |
| PMTF Information 2 | (0029,xx32) | SIEMENS MEDCOM HEADER | 3 | Transformation Information |
| PMTF Information 3 | (0029,xx33) | SIEMENS MEDCOM HEADER | 3 | Transformation Information |
| PMTF Information 4 | (0029,xx34) | SIEMENS MEDCOM HEADER | 3 | Transformation Information |
| Application Header Sequence | (0029,xx40) | SIEMENS MEDCOM HEADER | 3 | Sequence of Application Header Items.<br>Zero or more Items are included in this sequence.<br>Encoded as a sequence of items. |
| >Application Header Type | (0029,xx41) | SIEMENS MEDCOM HEADER | 1C | Application Header identification characteristics.<br>Required if a sequence is sent. |
| >Application Header ID | (0029,xx42) | SIEMENS MEDCOM HEADER | 3 | Identification of an application header. |
| >Application Header Version | (0029,xx43) | SIEMENS MEDCOM HEADER | 3 | Version of Application Header Info (0029,xx43) format. |
| >Application Header Info | (0029,xx44) | SIEMENS MEDCOM HEADER | 3 | Application-dependent information. |
| Workflow Control Flags | (0029,xx50) | SIEMENS MEDCOM HEADER | 3 | Eight freely definable flags. |

MEDCOM Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Archive Management Flag Keep Online | (0029,xx51) | SIEMENS MEDCOM HEADER | 3 | Flag to control a remote archive management system to keep the image always online (also when already archived).<br>Enumerated values: 00 = remote control not required, 01 = keep image online. |
| Archive Management Flag Do Not Archive | (0029,xx52) | SIEMENS MEDCOM HEADER | 3 | Flag to control a remote archive management system not to archive the related image.<br>Enumerated values: 00 = remote control not required, 01 = do not archive image. |
| Image Location Status | (0029,xx53) | SIEMENS MEDCOM HEADER | 3 | Image location status to control retrieving.<br>Defined Terms: ONLINE = retrieving has to be done as usual, NEARLINE = move request to SCP and delay according to value of Estimated Retrieve Time (0029,xx54), OFFLINE = invoking a retrieve operation initiates an operator request, INVALID = invoking a retrieve operation will always result in an error. |
| Estimated Retrieve Time | (0029,xx54) | SIEMENS MEDCOM HEADER | 3 | Estimated retrieve time in seconds. A value less then zero (< 0) indicates that the location is OFFLINE or INVALID. |
| Data Size of Retrieved Images | (0029,xx55) | SIEMENS MEDCOM HEADER | 3 | Data size of images in MByte. |
| Siemens Link Sequence | (0029,xx70) | SIEMENS MEDCOM HEADER | 3 | Sequence of Link items. Each item identifies the location of one missing tag. One or more items can be located in this sequence. |
| Referenced Tag | (0029,xx71) | SIEMENS MEDCOM HEADER | 1 | The referenced tag. The value of this tag is in the Child Data Object (CDO). Currently it is always Pixel Data (7FE0,0010). |

MEDCOM Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Referenced Tag Type | (0029,xx72) | SIEMENS MEDCOM HEADER | 1 | The value representation (type) of the missing tag (e.g. OW).<br>Enumerated values are all DICOM-defined Value Representations. |
| Referenced Value Length | (0029,xx73) | SIEMENS MEDCOM HEADER | 1 | The length of the referenced tag value in bytes. |
| Referenced Object Device Type | (0029,xx74) | SIEMENS MEDCOM HEADER | 1 | The Device Type that stores the Child Data Object (CDO) with the referenced tag value. Currently, it should be "SHMEM". In future, "SDM", "LOID" or "FILE" will also be possible.<br>Defined Terms are<br>SHMEM = Shared Memory<br>SDM = Series Data Management<br>LOID = Database<br>FILE |
| Referenced Object Device Location | (0029,xx75) | SIEMENS MEDCOM HEADER | 2 | The Location of the device that stores the Child Data Object (CDO) with the referenced tag value. For the "SHMEM" case, this is the shared memory directory.<br>This can be empty, in which case the default directory is taken. In future, for "SDM" this will be the SDM_ID, for FILE it will be the directory name, and for "LOID" it will be the database name. |

MEDCOM Header Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Referenced Object ID | (0029,xx76) | SIEMENS MEDCOM HEADER | 1 | The ID of the object that contains the Child Data Object (CDO) with the referenced tag value. In case of "SHMEM", this is the shared memory ID.<br>In future, for "SDM" this will be a Sirius OID, for "FILE" the file name, for "DB" the LOID. |
| Series Work Flow Status | (0029,xx60) | SIEMENS MEDCOM HEADER2 | 3 | *syngo* Patient Browser-specific flags used for clinical work:<br>- com = completed<br>- rea = read<br>- ver = verified |

**MEDCOM History Information**

The value of the MEDCOM History Information attribute (0029,xx20) is defined as follows:

MEDCOM History Information

| Part | Name | Type | Bytes | Notes |
|---|---|---|---|---|
| header | Identifier | String | 32 | Always "CSA HISTORY" |
| | Version | String | 32 | For example "V1.10" |
| n items | Class Name | String | 64 | |
| | Modification String | String | 1024 | |

### *MEDCOM OOG Module*

The table in this section contains private IOD Attributes that describe MEDCOM Object Oriented Graphics (OOG). This module is used when object graphics are drawn on the image and need to be stored as graphic object properties (Line, Cir-

cle, Rectangle, Arrow, and so on). Given the condition that the module contents were not removed by other modalities, the graphic objects remain re-animatable if such an image is transferred and is then retrieved back.

MEDCOM OOG Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| MedCom OOG Type | (0029,xx08) | SIEMENS MEDCOM OOG | 1 | MEDCOM Object-Oriented Graphics (OOG) identification characteristics.<br>Defined Terms:<br>MEDCOM OOG 1 |
| MedCom OOG Version | (0029,xx09) | SIEMENS MEDCOM OOG | 3 | Version of MEDCOM OOG Info (0029,xx10) format |
| MedCom OOG Info | (0029,xx10) | SIEMENS MEDCOM OOG | 3 | MEDCOM Object-Oriented Graphics (OOG) data |

The graphics objects are also stored in one Image overlay plane for compatibility with other products that do not support the MedCom OOG module. Any system which does not support this MedCom OOG module has to remove these private attributes when modifying the image overlay plane content.

### *syngo Report Data*

The module contains private IOD Attributes that describe *syngo* reports. This module is used when *syngo* report data is added to DICOM SR and DICOM SC objects.

syngo Report Data

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| *syngo* Report Type | (0029,xx08) | SIEMENS CSA REPORT | 1 | syngo report characteristics, e.g. report creating application.<br>Defined Terms:<br>CT_CASCORING<br>CT_CIRCULATION<br>CT_LUNGCARE<br>INSPACE<br>MR_ARGUS<br>This attribute value is used to identify the corresponding application during generic extension dll management. A restricted character set is used:<br>Only A-Z and underscore are supported. |
| *syngo* Report Version | (0029,xx09) | SIEMENS CSA REPORT | 3 | Version of *syngo* Report Data (0029,xx10) format |
| *syngo* Report Data | (0029,xx10) | SIEMENS CSA ENVELOPE | 3 | Application-specific report related data |
| *syngo* Report Presentation | (0029,xx11) | SIEMENS CSA ENVELOPE | 3 | Application-specific report related data |

syngo Report Data

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| SR Variant | (0029,xx15) | SIEMENS CSA REPORT | | DICOM SR Variant.<br>**Enumerated Values:**<br>0 = Basic Text SR (1.2.840.1008.5.1.4.1.1.88.11)<br>1 = Enhanced SR (1.2.840.1008.5.1.4.1.1.88.22)<br>2 = Comprehensive SR (1.2.840.1008.5.1.4.1.1.88.33)<br>3 = Mammography CAD SR (1.2.840.1008.5.1.4.1.1.88.50)<br>4 = Key Object Selection Document (1.2.840.1008.5.1.4.1.1.88.59)<br>5 = Chest CAD SR (1.2.840.1008.5.1.4.1.1.88.65) |
| SC SOP Instance UID | (0029,xx17) | SIEMENS CSA REPORT | 3 | DICOM SOP Instance UID of syngo-based SC image representing the syngo report object.<br>This UID is used to identify the Resulting SC object after SR to SC conversion. |

## Private Elements for CT Image Storage SOP Class

The following private attributes are defined for Somaris/7.

### Registry of DICOM Data Elements

| Tag | Private Owner Code | Name | VR | VM | Notes |
|---|---|---|---|---|---|
| (0019,xx90) | SIEMENS CT VA0 COAD | Osteo Offset | DS | 1 | Offset of the water-equivalent material of the Siemens Osteo phantom to real water |
| (0019,xx92) | SIEMENS CT VA0 COAD | Osteo Regression Line Slope | DS | 1 | Slope of the regression line for the ESP (European Spine Phantom) standardization.<br>If a scalefactor is defined for the in-scan reference phantom, this value contains the product of the scalefactor and the slope of the regression line for the ESP standardization. |
| (0019,xx93) | SIEMENS CT VA0 COAD | Osteo Regression Line Intercept | DS | 1 | Intercept of the regression line for the ESP (European Spine Phantom) standardization |
| (0019,xx96) | SIEMENS CT VA0 COAD | Osteo Phantom Number | IS | 1 | Number of the Siemens Osteo phantom |
| | | | | | |
| (0019,xxB0) | SIEMENS CT VA0 COAD | Feed per Rotation | DS | 1 | Som/4-style Feed per Rotation (Backwards Compatibility) |
| (0019,xxBD) | SIEMENS CT VA0 COAD | Pulmo Trigger Level | IS | 1 | Spirometer trigger level used for the scan, given in percent of VC (Vital Capacity) of the patient |
| (0019,xxBE) | SIEMENS CT VA0 COAD | Expiratoric Reserve Volume | DS | 1 | ERV (Exspiratoric Reserve Volume) achieved by the patient |
| (0019,xxBF) | SIEMENS CT VA0 COAD | Vital Capacity | DS | 1 | VC (Vital Capacity) achieved by the patient |
| (0019,xxC0) | SIEMENS CT VA0 COAD | Pulmo Water | DS | 1 | Density of the water insert of the Siemens Pulmo phantom |

| Tag | Private Owner Code | Name | VR | VM | Notes |
|---|---|---|---|---|---|
| (0019,xxC1) | SIEMENS CT VA0 COAD | Pulmo Air | DS | 1 | Density of the air holes of the Siemens Pulmo phantom |
| (0019,xxC2) | SIEMENS CT VA0 COAD | Pulmo Date | DA | 1 | Date of the evaluation of the Siemens Pulmo phantom |
| (0019,xxC3) | SIEMENS CT VA0 COAD | Pulmo Time | TM | 1 | Time of the evaluation of the Siemens Pulmo phantom |
| (0021xx11) | SIEMENS MED | Target | DS | 2 | Som/4-style Target (Backwards Compatibility) |
| 0009,00xx | SIEMENS CT VA1 DUMMY | Private Creator Data Element | LO | 1 | 1 |

### Private SOP class CSA Non-Image

This chapter includes the definition of the Siemens Healthcare defined private Non-Image Object (called CsaNonImage IOD). The focus of this private Non-Image Object is to address the requirement for non-image data sets found in *syngo*-based applications.

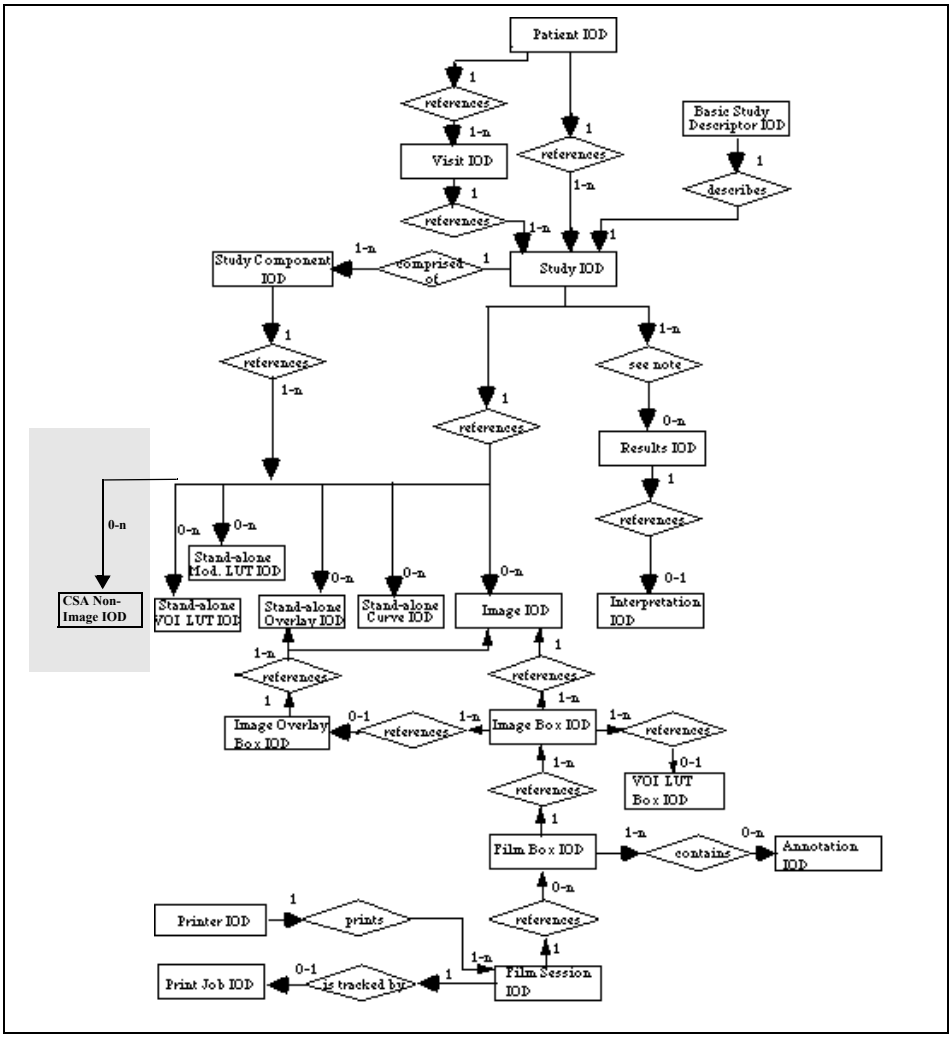
The MedCom Non-Image Information Object Definition specifies data sets that are converted from a non-DICOM format to a modality-independent DICOM format.

Examples of such manufacturer model-dependent data sets are:

- Raw Data
- CT Admin Data
- MR Spectroscopy Data
- Etc.

### CSA Non-Image IOD Entity Relationship Model

The E-R model in [DICOM] A.1.2 depicts those components of the DICOM Information Model that directly refer to the CSA Non-Image IOD. The frame of reference IE, overlay IE, modality lookup table IE, VOI lookup table IE and curve IE are not components of the CSA Non-Image IOD.




## CSA Non-Image IOD Module Table

3CSA Non-Image IOD Modules

| IE | Module | Reference | Usage |
|---|---|---|---|
| Patient | Patient | [1] PS3.3 C.7.1.1 | M |
| Study | General Study | [1] PS3.3 C.7.2.1 | M |
| | Patient Study | [1] PS3.3 C.7.2.2 | U |
| Series | General Series | [1] PS3.3 C.7.3.1 | M |
| Equipment | General Equipment | [1] PS3.3 C.7.5.1 | U |

3CSA Non-Image IOD Modules

| IE | Module | Reference | Usage |
|---|---|---|---|
| CSA | CSA Image Header | *CSA Image Header Module* →A3-35 | U |
| | CSA Series Header | *CSA Series Header Module* →A3-36 | U |
| | MEDCOM Header | *MEDCOM Header Module* →A3-36 | U |
| | CSA Non-Image | *CSA Non-Image Module* →A3-48 | M |
| | SOP Common | [1] PS3.3 C.12.1 | M |

### CSA Non-Image Module

The table in this section contains private IOD Attributes that describe CSA Non-Images.

CSA Non-Image Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Image Type | (0008,0008) | - | 3 | Image-identification characteristics. See *CT Extensions of the Non-Image Object* →A3-51. |
| Acquisition Date | (0008,0022) | - | 3 | The start date for acquisition of data that resulted in this data set |
| Acquisition Time | (0008,0032) | - | 3 | The start time for acquisition of data that resulted in this data set |
| Conversion Type | (0008,0064) | - | 3 | Describes the kind of image conversion.<br>Defined Terms: DV = Digitized Video, DI = Digital Interface, DF = Digitized Film, WSD = Workstation. |
| Referenced Image Sequence | (0008,1140) | - | 3 | A sequence which provides reference to a set of Image SOP Class/Instance identifying other images significantly related to this data set.<br>Encoded as a sequence of items: (0008,1150) and (0008,1155). |
| Derivation Description | (0008,2111) | - | 3 | A text description of how this data set was derived |

CSA Non-Image Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Source Image Sequence | (0008,2112) | - | 3 | A Sequence which identifies the set of Image SOP Class/Instance pairs of the Images which were used to derive this data set.<br>Zero or more Items may be included in this Sequence.<br>Encoded as a sequence of items: (0008,1150) and (0008,1155). |
| Patient Position | (0018,5100) | - | 3 | Patient position descriptor relative to the equipment |
| Acquisition Number | (0020,0012) | - | 3 | A number identifying the gathering of data over a period of time which resulted in this data set |
| Instance Number | (0020,0013) | - | 3 | A number that identifies this data set |
| Frame of Reference UID | (0020,0052) | - | 3 | Uniquely identifies the frame of reference for a Series |
| Image Comments | (0020,4000) | - | 3 | User-defined comments about the image |
| Quality Control Image | (0028,0300) | - | 3 | Indicates whether or not this image is a quality control or a phantom image.<br>If this Attribute is not available, then the image may or may not be a quality control or a phantom image.<br>Enumerated Values: YES, NO. |
| Burned In Annotation | (0028,0301) | - | 3 | Indicates whether or not the image contains sufficient burned-in annotation to identify the patient and date the image was acquired.<br>If this Attribute is not available, then the image may or may not contain burned-in annotation.<br>Enumerated Values: YES, NO. |
| Lossy Image Compression | (0028,2110) | - | 3 | Specifies whether an Image has been subjected to lossy compression.<br>Enumerated Values: 00 = Image has NOT been subjected to lossy compression, 01 = Image has been subjected to lossy compression. |

CSA Non-Image Module

| Attribute Name | Tag | Private Creator | Type | Notes |
|---|---|---|---|---|
| Lossy Image Compression Ratio | (0028,2112) | - | 3 | Describes the approximate lossy compression ratio(s) that have been applied to this image.<br>May be multi-valued if successive lossy compression steps have been applied. |
| CSA Data Type | (0029,xx08) | SIEMENS CSA NON-IMAGE | 1 | CSA Data identification characteristics.<br>Defined Terms:<br>RAW DATA NUM 4 = NUMARIS/4 Raw Data<br>SPEC NUM 4 = NUMARIS/4 Spectroscopy<br>RAW DATA SOM 5 = Somaris/5 Raw Data<br>RAW DATA SOM 7 = Somaris/7 Raw Data<br>BSR REPORT = BSR Study Report Data<br>COL REPORT SOM5 = syngo Colonography Report Data |
| CSA Data Version | (0029,xx09) | SIEMENS CSA NON-IMAGE | 3 | Version of CSA Data Info (0029,xx10) format and CSA Non-Image Data (7FE1,xx10) format. |
| CSA Data Info | (0029,xx10) | SIEMENS CSA NON-IMAGE | 3 | Information describing the CSA Data (7FE1,xx10).<br>The value of the CSA Data Info attribute (0029,xx10) can be built up in each user-defined format. |
| CSA Data | (7FE1,xx10) | SIEMENS CSA NON-IMAGE | 1 | Binary data as a byte stream |

### CT Extensions of the Non-Image Object

Somaris/7 uses the following defined terms for the Image Type (0008,0008):

- Value 1: ORIGINAL
- Value 2: PRIMARY
- Value 3: AXIAL, LOCALIZER, OTHER
- Value4: a CT_SOM5 * enumeration
- Value5: Somaris/7-specific enumeration

The following table lists the Somaris/7 non-image types and the corresponding combinations of the Image Type Attribute values:

(Non-)Image Type (0008,0008) for private Somaris/7 Non-image Objects

| Description | 0008,0008 Value 1 | 0008,0008 Value 2 | 0008,0008 Value 3 | 0008,0008 Value 4 | 0008,0008 Value 5 |
|---|---|---|---|---|---|
| CAD Results | DERIVED | SECONDARY | OTHER | CAD MARKS | None |
| Colonography Data | DERIVED | SECONDARY | OTHER | CT_SOM5 COL | None |
| Coronary Tree | DERIVED | SECONDARY | OTHER | CT_CIRCULATION | None |
| Raw Data | Same entries as for images | | | | |

## Private SOP Classes

SOP Classes

| SOP Class Name | SOP Class UID |
|---|---|
| CSA Non-Image | 1.3.12.2.1107.5.9.1 |

## Private Transfer Syntaxes

Not applicable

# *Extensions/Specifications/Privatizations*

# Communication Profiles

## Supported Communication Stacks

The Somaris/7 DICOM application provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

The product target operating system is Windows 7.

### OSI Stack

Not supported.

### TCP/IP Stack

The Somaris/7 DICOM application uses the TCP/IP stack from the Windows 7 system. It uses the MergeCOM-3 sub-routine library from Merge Technologies Inc., which is based on a Berkeley socket interface.

#### API

The Somaris/7 DICOM application uses the MergeCOM library that is based on a TCP/IP socket interface.

#### Physical Media Support

The Somaris/7 DICOM application is indifferent to the physical medium over which TCP/IP executes. It inherits this from the target operating system upon which it executes.

### Point-to-Point Stack

Not supported.

# Communication Profiles

# Configuration

## AE Title / Presentation Address Mapping

According to the DICOM Standard, the AET string can be up to 16 characters long and must not contain any extended characters, only 7-bit ASCII characters (excluding Control Characters).

! The current implementation does not support the full DICOM standard syntax. Spaces and special characters (such as &<>") in the AE title string are not supported.

Change of the default AE Titles chosen by the system can be performed in the Service UI under

"Configuration / DICOM / General" item - first page.

Default AET Characteristics

| Appication Entity | Default AET | TCI/IP Port |
|---|---|---|
| Verification SCU | RANDOM_STR_SEC<br>RANDOM_STR | - |
| Verification SCP | | 2762 (fixed)<br>104 (fixed) |
| Storage SCU | | - |
| Storage SCP | | 2762 (fixed)<br>104 (fixed) |
| Query/Retrieve SCU | | - |
| Query/Retrieve SCP | | 2762 (fixed)<br>104 (fixed) |
| Print SCU | RANDOM_STR | - |
| Worklist SCU | RANDOM_STR | - |
| MPPS SCU | | - |

Port 2762 is used for Secure DICOM Communication and Port 104 is used for Unsecure DICOM Communication.

There are two AET for Storage SCP, Verification SCP and Query/Retrieve SCP. RANDOM_STR and RANDOM_STR_SEC denote the randomly generated AE Titles. RANDOM_STR_SEC denotes the AET value for Secure DICOM communication.

### DICOM Verification

The Verification Service uses the AE configuration of the DICOM Service that is checked with the C-ECHO message. For example, Verification uses the Storage AE, if initiated to check the configuration of a remote DICOM node.

### DICOM Storage/StorageCommitment/QR AE Title

There is a common AE Title for the Storage, Storage Commitment and Query/Retrieve services. This can be configured via the Service UI in Configuration/DICOM/General.

The port is set to the fixed value of 104.

### DICOM Modality Worklist and MPPS AE Title

There is a common AE Title for the Modality Worklist and MPPS services. This can be configured via the Service UI in Configuration/DICOM/General.

### DICOM Print AE Title

There is a separate AE Title for the Print application. This can be configured via the Service UI in Configuration/DICOM/General.

Input of AETs starting with a numeric character is not possible.

### Remote AE Titles and Presentation Addresses

Remote AETs, host names, IP addresses and port numbers can be configured using the Service application. For each AET, a list of supported services can be configured.

## Configurable Parameters

The Application Entity Titles, host names and port numbers for remote AE are configured using the Somaris/7 Service/Installation Tool. For each AET, the list of services supported can be configured.

## Storage, Storage Commitment and Query/Retrieve

- "a quality factor which determines the proposed transfer syntax in case that a user has initiated C-STORE. By convention, 0 means that only Uncompressed Transfer Syntax(es) are proposed, 100 means that the Lossless Transfer Syntax is proposed, and any other value between 1 and 99 means that a JPEG Lossy Transfer Syntax is proposed. One Uncompressed Transfer Syntax will be proposed in any case. This parameter is a general one for all destination nodes.
- "a "compression type supported" which determines the proposed transfer syntax in case the C-STORE was initiated as a sub-operation of an incoming C-MOVE-RQ. By convention, 0 means that only Uncompressed Transfer Syntax(es) are proposed, 1 means that the Lossless Transfer Syntax is proposed, and 2 means that a JPEG Lossy Transfer Syntax is proposed. One uncompressed transfer syntax will be proposed in any case. This parameter can be set for each configured destination node.

---

! By default, association requests are accepted by the SCP regardless of the value of the DICOM Application Context Name set in the requests.

This behavior can be changed by modifying the value of the ACCEPT_ANY_CONTEXT_NAME entry in the mergecom.pro configuration file of the MergeCOM-3 toolkit. If the value is FALSE, association requests are accepted only when the DICOM Application Context Name is set to "1.2.840.10008.3.1.1.1" (see DICOM specification PS 3.7-2003, A.2.1).

---

**Additional configurable parameters for the Storage Commitment service:**

When acting as an SCU:

- Flag to indicate whether the association will be kept open to receive the response, or to close the association and be prepared to receive the response on another association
- Time-out which defines how long the association of N-ACTION is kept to receive an N-EVENT-REPORT on the same association. The same value is used to wait for an N-EVENT-REPORT on another association (applicability of transaction UID).
  (default 1 h)

When acting as an SCP:

- Flag to indicate whether an archive system is installed

## Print

The Service application can be used to configure the SCP (DICOM printer).

It is mandatory to set these parameters:

- AET
- Host name
- IP address
- Port number

These parameters have defaults as per configuration file and can be changed:

- Default camera
- Pixel size
- Additional or changed film sheet formats (for example, inch 14x14, inch 14x17, ...)
- List mapping pixel size to each film sheet format
- Minimum density
- Stored printed film jobs
- Media type
- Film destination

## Modality Worklist

The Service application can be used to set the AETs, port numbers, host names, IP addresses, capabilities, and time-outs for the remote nodes (SCPs).

**Additional configurable parameters for the Basic Worklist Query:**

- Query Waiting time - the time to wait for the C-FIND-RSP after sending the C-FIND-RQ (default 20 s)
- Max. Query Match Number - the maximum number of entries accepted in one worklist (default is 200)
- Query Interval - the time between two C-FIND-RQs to the Hospital Information System (default is 60 min.)
  - Broad Worklist Query behaviour; two values are defined:

    Set the AE Title search attribute to the own AE Title, and the Modality search attribute to "*".

    Set the Modality search attribute to the own modality and the AE Title search attribute to "*".

The sending of an empty Specific Character Set in a C-FIND-RQ can be omitted by configuration. However, this is not available in the Service application but must be set by a Siemens service technician.

### Modality Performed Procedure Step

The Service application can be used to configure the Modality Worklist SCP to also be a Modality Performed Procedure Step SCP.

**Additional configurable parameters for the Modality Performed Procedure Step:**

- Default Catalog Name - (0008,0102) used for items entered in the MPPS UI
- Default Catalog Version - (0008,0103) used for items entered in the MPPS UI

## Default Parameters

This configuration tool also uses some default parameters:

- Maximum PDU size set to 262144 Bytes
  - Time-out for accepting/rejecting an association request: 60 s
  - Time-out for responding to an association open/close request: 60 s
  - Time-out for accepting a message over the network: 60 s
  - Time-out for waiting for data between TCP/IP packets: 60 s

The Time-outs for waiting for a Service Request/Response message from the remote node are as follows:

- For Storage SCP/SCU: 600 s
  - For the Storage Commitment SCU:
    Time-out for Response to N-ACTION: 600 s
    Time-out for N-EVENT-REPORT: configurable, see *Configurable Parameters* →A5-2
- For Query/Retrieve SCP/SCU: 600 s
- For Modality Worklist SCU: configurable, see *Configurable Parameters* →A5-2.
- For Print Management SCU:
  Time-out for Response to N-SET-RQ: 240 s
  Time-out for Response to other Requests: 60 s

# Configuration

## Support of Extended Character Sets

The Somaris/7 DICOM application supports the following character sets as defined in the four tables below:

Single-Byte Character Sets without Code Extension

| Character Set Description | Defined Term | ISO Registration Number | Character Set |
|---|---|---|---|
| Default repertoire | None | ISO_IR 6 | ISO 646 |
| Latin alphabet no. 1 | ISO_IR 100 | ISO_IR 100 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet no. 2 | ISO_IR 101 | ISO_IR 101 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet no. 3 | ISO_IR 109 | ISO_IR 109 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet no. 4 | ISO_IR 110 | ISO_IR 110 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Cyrillic | ISO_IR 144 | ISO_IR 144 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Arabic | ISO_IR 127 | ISO_IR 127 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Greek | ISO_IR 126 | ISO_IR 126 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Hebrew | ISO_IR 138 | ISO_IR 138 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet no. 5 | ISO_IR 148 | ISO_IR 148 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Japanese | ISO_IR 13 | ISO_IR 13 | JIS X 0201:Katakana |
| | | ISO_IR 14 | JIS X 0201:Romaji |

# Support of Extended Character Sets

Single-Byte Character Sets with Code Extension

| Character Set Description | Defined Term | Standart for Code Extension | ESC Sequence | ISO Registration Number | Character Set |
|---|---|---|---|---|---|
| Default repertoire | ISO 2022 IR 6 | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet no.1 | ISO 2022 IR 100 | ISO 2022 | ESC 02/13 04/01 | ISO_IR 100 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet no.2 | ISO 2022 IR 101 | ISO 2022 | ESC 02/13 04/02 | ISO_IR 101 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet no.3 | ISO 2022 IR 109 | ISO 2022 | ESC 02/13 04/03 | ISO_IR 109 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet no.4 | ISO 2022 IR 110 | ISO 2022 | ESC 02/13 04/04 | ISO_IR 110 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Cyrillic | ISO 2022 IR 144 | ISO 2022 | ESC 02/13 04/12 | ISO_IR 144 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Arabic | ISO 2022 IR 127 | ISO 2022 | ESC 02/13 04/07 | ISO_IR 127 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Greek | ISO 2022 IR 126 | ISO 2022 | ESC 02/13 04/06 | ISO_IR 126 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Hebrew | ISO 2022 IR 138 | ISO 2022 | ESC 02/13 04/08 | ISO_IR 138 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet no.5 | ISO 2022 IR 148 | ISO 2022 | ESC 02/13 04/13 | ISO_IR 148 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |

Single-Byte Character Sets with Code Extension

| Character Set Description | Defined Term | Standart for Code Extension | ESC Sequence | ISO Registration Number | Character Set |
|---|---|---|---|---|---|
| Japanese | ISO 2022 IR 13 | ISO 2022 | ESC 02/13 04/09 | ISO_IR 13 | JIS X 0201:Katakana |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 14 | JIS X 0201-1976:Romaji |

Multi-Byte Character Sets without Code Extension

| Character Set Description | Defined Term | ISO Registration Number | Character Set |
|---|---|---|---|
| Unicode | ISO_IR 192 | ISO 10646 | Unicode in UTF-8 |
| Chinese | GB18030 | GB18030 | GB 18030-2000 (China Association for Standardization) |

Multi-Byte Character Sets with Code Extension

| Character Set Description | Defined Term | Standard for Code Extension | ESC Sequence | ISO Registration Number | Character Set |
|---|---|---|---|---|---|
| Japanese | ISO 2022 IR 87 | ISO 2022 | ESC 02/04 04/02 | ISO_IR 87 | JIS X 0208: Kanji |
| | ISO 2022 IR 159 | ISO 2022 | ESC 02/04 02/08 04/04 | ISO_IR 159 | JIS X 2012: Supplementary Kanji set |
| Chinese[a] | ISO 2022 IR 58 | ISO 2022 | ESC 02/04 04/01 | ISO_IR 58 | GB2312-80 (China Association for Standardization) |

[a.] This Character Set is an extension of DICOM for the Chinese language.

When a mismatch exists between the SCS tags (0008,0005) and the characters in an IOD coming into the system, then the following measures are taken to make the characters DICOM-conform:

- Try to import with ISO-IR 100. If ISO-IR 100 also fails, convert each illegal character to '?'.

# Support of Extended Character Sets

There are now 3 categories of character sets which have to be differentiated because of their different encoding formats:

- Conventional ISO character sets: ISO_IR 6, ISO 2022 IR 6, ISO_IR 100, etc. =>Encoded in ISO 2022
- ISO_IR 192: Encoded in UTF-8
- GB18030: Encoded in GB18030

It is not possible to recognize the following mismatches automatically on receiving or importing:

- An attribute value is encoded in ISO_IR 192 <=> (0008,0005) contains a conventional ISO character set as the primary character set
- An attribute value is encoded in GB18030 <=> (0008,0005) contains a conventional ISO character set as the primary character set
- An attribute value is encoded in ISO 2022 <=> (0008,0005) contains ISO_IR 192
- An attribute value is encoded in ISO 2022 <=> (0008,0005) contains GB18030

An IOD that contains one of the above mentioned inconsistencies is not DICOM-conform. As these kinds of inconsistencies cannot be recognized by the system, the IOD is not rejected, but the character data might be corrupted.

Older versions of syngo do not support the newly introduced character sets ISO_IR 192 and GB18030, and their special encodings. This means that an IOD which contains one of these new character sets in (0008,0005) will be rejected by an older syngo system.

# Security

## Security Profile

The Somaris/7 DICOM application conforms to the IHE Basic Security Integration Profile that is used for the DICOM Communication.

Syngo allows the use of either a conventional (non-secure) DICOM communication or a secure DICOM communication. For secure DICOM communication syngo application uses Transport Layer Protocol (TLS v1.0). Following features are supported for the secure DICOM communication.

The port in which syngo acts as SCP for secure DICOM communication is 2762 (fixed). The port in which syngo acts as SCP for unsecure DICOM communication is 104 (fixed). By default unsecure mode is not available.

The following security profile are done in syngo using TLS 1.0 protocol

- Secure authentication of node
- Integrity and confendiality of transmitted data.
- Generation of audit trail records access control and user authentication.

## Security Transport Connection Profiles

Somaris/7 conforms to the Basic TLS Transport Connection Profile. Somaris/7 initiates the TLS connections and accepts TLS connections with Storage commitment.

Somaris/7 provides a configuration panel by which local systems can configure the certificate that needs to bind for DICOM communication. Secure communication is a “mode of operation” of syngo supported by the implementation of the DICOM Basic TLS Secure Transport Connection Profile. This functionality will be used by the nodes that can authenticate each other before they exchange DICOM information. For secure communication the TLS protocol v1.0 is used which provides message authentication, integrity and confidentiality.

Somaris/7 supports X.509 certificates. The type of X.509 certificates that are supported in this Somaris/7 are

1. Self Signed certificate
2. Certificate for which chain building (Trusted chain building, Trusted CA) is possible.

The following TLS certification checks will be done (TLS Handshake). The machine (either server or client) that will send its certificate will:

- Choose the certificate according to Common Name (CN), if the syngo self signed is used. If customer specific certificate needs to be used then Serial Number of the certificate is used for choosing the certificate.

The server verifies

- that the client certificate is X.509 certificate which in not tampered with
- that the client certificate is in the list of trusted certificates (Trust Chain Building)
- that the client certificate is not in the revoked list.
- that the client certificate is not expired (present time is between "Valid From" and "Valid To" fields of X.509 certificate)
- that the client certificate has the correct purpose (at least the client authentication purpose).

The client verifies:

- that the server certificate is a X.509 certificate which is not tampered with
- that the server certificate is in the list of trusted certificates (Trust Chain Building)
- that the server certificate is not in the revoked list.
- that the server certificate is not expired (present time is between "Valid From" and "Valid To" fields of X.509 certificate)
- that the server certificate has the correct purpose (at least the server authentication purpose).

No verification is done on certificate for

1. Direct certificate validation
2. Certificate received from peer have multiple X.509 certificates within the TLS Handshake.

The X.509 certificate imported and used for DICOM communication

1. must have purpose set for Client and Server Authentication.
2. must be exportable to generate the certificate file and private key file.

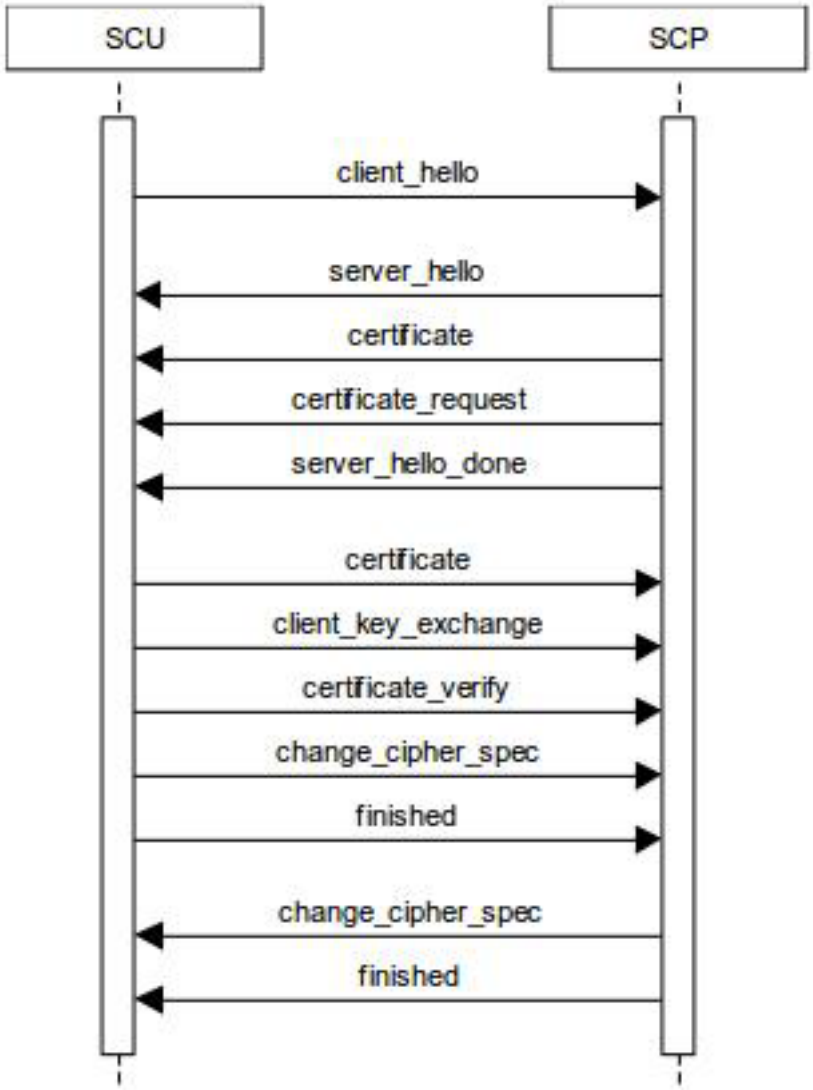
If intermediate and root X.509 certificates are present then the intermediate certificate must be imported to Intermediate Certificate Authorities -> Certificates. The root certificate must be imported to the Trusted Root Certificates -> Certificates.

Somaris/7 communicates with either of the following Cipher suites for encrypting the data send across the network:

TLS_RSA_WITH_AES_128_CBC_SHA

TLS_RSA_WITH_3DES_EDE_CBC_SHA

There is no support for NULL Cipher(TLS_RSA_WITH_NULL_SHA).


SCU
SCP
client_hello
server_hello
certificate
certificate_request
server_hello_done
certificate
client_key_exchange
certificate_verify
change_cipher_spec
finished
change_cipher_spec
finished

# Security

# Part II - Media Storage

This part contains the Conformance Statement to all "Offline Media Application Profiles (incl. private extensions)" supported by the Somaris/7 archive options.

The application profiles supported are:

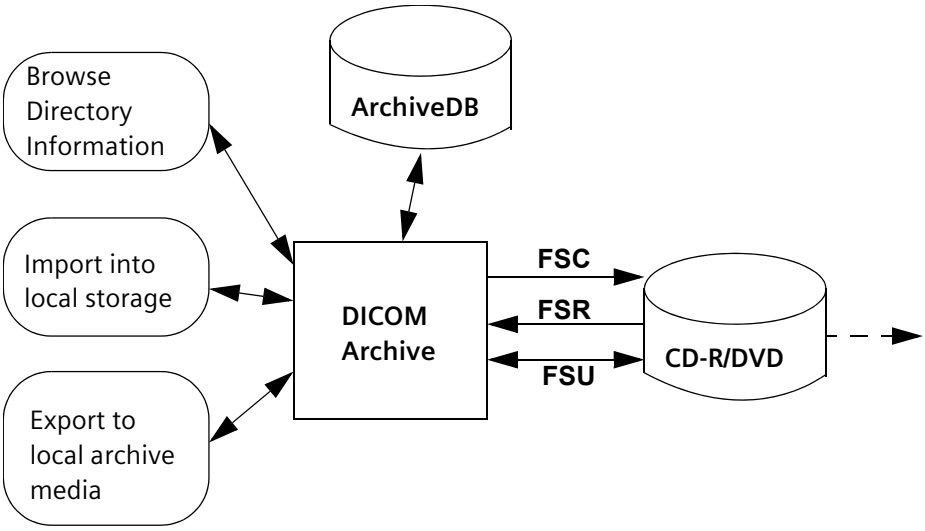
- Standard Application Profiles
- Augmented Application Profiles
- syngo private Application Profiles

For general introductory topics, see *DICOM® Standards Publication Part(s) 3, 4, ©NEMA Standard is under continous maintenance, the current official version is available at: http://dicom.nema.org* →-iv.

# *Implementation Models*

# DICOM Conformance Statement

## Application Data Flow Diagram




The DICOM archive application serves as an interface to the CD-R/DVD off-line medium device. It provides interfaces to include the off-line media directory into the browser and to copy SOP instances to a medium or retrieve SOP Instances from the medium into local storage.

The DICOM Archive application supports 120 mm CD-R and DVD-R (see *Application profiles, Activities, and Roles for the DICOM Archive application* →B2-1).

The FSU role updates new SOP Instances only to media with pre-existing File sets conforming to the Application Profiles supported.

The contents of the DICOMDIR are temporarily stored in the Archive-Database.

## Functional definitions of AEs

The Somaris/7 DICOM off-line media storage application consists of the DICOM Archive application entity serving all interfaces to access off-line media. The DICOM Archive application is capable of the following:

1. Creating a new File set on an unwritten medium (Export to...)
2. Updating an existing File set by writing new SOP Instances on the medium (Export to...)
3. Importing SOP Instances from the medium to local storage
4. Reading the File set's DICOMDIR information temporarily into the database and passing it to display applications

## Sequencing of Real-World Activities

The DICOM Archive application does not perform updates before the Directory information of the DICOMDIR has been completely read.

When performing updates, the existence of SOP instances is checked before updating. Duplicate instances are avoided.

## File Meta Information Options

| | |
|---|---|
| Implementation Class UID | 1.3.12.2.1107.5.1.4 |
| Implementation Version Name | SIEMENS_S7VA62A |

# AE Specifications

## DICOM Archive Specification

The DICOM Archive application provides Standard conformance to the Media Storage Service Class (Interchange Option).

Application profiles, Activities, and Roles for the DICOM Archive application

| Application Profiles Supported | Real-World Activity | Role | SC Option |
|---|---|---|---|
| PRI-SYNGO-CD | Browse Directory Information | FSR | Interchange |
| PRI-SYNGO-DVD | Import into local Storage | FSR | Interchange |
| AUG-GEN-CD<br>AUG-CTMR-CD[a]<br>STD-XA1K-CD[a] | Export to local archive media | FSC,FSU | Interchange |
| STD-GEN-CD | Browse Directory Information | FSR | Interchange |
| STD-CTMR-CD<br>STD-XABC-CD<br>STD-XA1K-CD<br>TD-US-zz-yF-xxxxxx[b] | Import into local Storage | FSR | Interchange |

[a.] With no private SOP Class used, the PRI-SYNGO-CD profile definitions are appropriate to describe the augmentation of the related STD Profiles.

[b.] All combinations of the following values for zz, yF and xxxxxx are supported:
'yF' can take two values: SF for Single Frame and MF for Multi-Frame.
'zz' can take three values: ID (Image Display), SC (Spatial Calibration) or CC (Combined Calibration)
xxxxxx can take 2 values: CDR and DVD

On syngo-based products, the Private Extended syngo Profile (for example, PRI-SYNGO-CD) is preferred for use by the system. The General Purpose Interchange Profile (STD-GEN-CD), Ultrasound Profile (STD-US-xxx), CT and MR Image Profile (STD-CTMR-xxx), Waveform Interchange (STD-WVFM-xxx), Basic Cardiac Profile (STD-XABC-CD) and 1024 X-Ray Angiographic Profile (STD-XA1K-CD) are supported with read capability of the related media.

## File Meta Information for the Application Entity

The Source Application Entity Title is set by configuration. See *Configuration* →A5-1 for details.

## Real-World Activities for this Application Entity

### Real-World Activity: Browse Directory Information

The DICOM Archive application acts as an FSR using the interchange option when requested to read the media directory.

The DICOM archive application reads the DICOMDIR and inserts the directory entries that are valid for the application profiles supported into a local database. The database can then be used to browse media contents.

---

! Icon Image SQ is also supported in DICOMDIR. However, only those Icon Images with Bits Allocated (0028,0100) equal to 8 and a size of 64 x 64 or 128 x 128 pixels are imported into the database and are visible in the Patient Browser.

---

#### Application Profiles for the RWA: Browse Directory Information

See *Application profiles, Activities, and Roles for the DICOM Archive application* →B2-1 for the Application Profiles listed that invoke this Application Entity for the Browse Directory Information RWA.

### Real-World Activity: Import into local Storage

The DICOM Archive application acts as an FSR using the interchange option when requested to read SOP Instances from the medium to the local storage.

The SOP Instance selected from the media directory is copied into the local storage. Only SOP Instances that are valid for the application profile supported and that are listed as supported by the Storage SCP Conformance section (see *Storage AE Specification* →A2-3), can be retrieved from media storage.This is due to the fact that the Browse Directory Information filters all SOP Instances not matching the Application profiles supported.

During operation, no "Attribute Value Precedence" is applied to the SOP Instances. Detached Patient Management is not supported (please refer to DICOM part 11, Media Storage Application Profiles).

For media conforming to the STD-GEN-CD Profile, the following SOP classes are supported as an FSR:

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID |
|---|---|---|
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID |
|---|---|---|
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| CT Image | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Breast Tomosynthesis Image | 1.2.840.10008.5.1.4.1.1.13.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| MR Image | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| MR Spectroscopy Image | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID |
|---|---|---|
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Multi-frame Grayscale Word SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| 12-lead ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| General ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Ambulatory ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Hemodynamic Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.2.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Cardiac Electrophysiology Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.3.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Basic Voice Audio Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| X-Ray Angigraphic Image | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| X-Ray Radiofluoroscopic-Image | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Basic Text SR | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID |
|---|---|---|
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Dose | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Structure Set | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.4 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Plan | 1.2.840.10008.5.1.4.1.1.481.5 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Brachy Treatment Record | 1.2.840.10008.5.1.4.1.1.481.6 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Treatment Summary Record | 1.2.840.10008.5.1.4.1.1.481.7 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Ion Plan | 1.2.840.10008.5.1.4.1.1.481.8 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| RT Ion Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.9 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Csa Non-Image | 1.3.12.2.1107.5.9.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |
| Spatial Fiducial Storage | 1.2.840.10008.5.1.4.1.1.66.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 |

Importing of Enhanced CT and Enhanced MR images with concatenated data is not supported. This is realized by checking the Concatenation UID (Tag ID: 0020, 9161) of the Multi-Frame Funtional Group, which is set for Concatenated data.

After receiving an image of type Multi-frame Single Bit Secondary Capture Image, Multi-frame Grayscale Byte Secondary Capture Image, Multi-frame Grayscale Word Secondary Capture Image and Multi-frame True Color Secondary Capture Image, the SOP class UID of the received image is changed and stored as a Secondary Capture Image (1.2.840.10008.5.1.4.1.1.7).

#### *Application Profiles for the RWA: Import into local Storage*

See *Application profiles, Activities, and Roles for the DICOM Archive application* →B2-1 for the Application Profiles listed that invoke this Application Entity for the Import to Local Storage RWA.

### *Real-World Activity: Export to local Archive Media*

The DICOM Archive application acts as an FSU (for media with an existing DICOM file-set) or an FSC (media not initialized) using the interchange option when requested to copy SOP Instances from the local storage to the local Archive medium.

The DICOM Archive application receives a list of SOP Instances to be copied to the local archive medium. According to the state of the medium inserted (new medium, Medium with DICOM fileset), the validity of the SOP Instances according to the applicable profile is checked. Only valid SOP Instances are accepted.

When the DICOM archive application is requested to copy SOP Instances, the preferred application profile according to the configuration will be used to validate and copy the referred SOP Instances. When creating a new file-set, no Descriptor File is allocated and the related ID is not used.

The DICOM archive application does not close the medium.

#### *Application Profiles for the RWA: Export to local Archive Media*

See *Application profiles, Activities, and Roles for the DICOM Archive application* →B2-1 for the Application Profiles listed that invoke this Application Entity for export to local Archive Media RWA.

# Augmented and Private Profiles

## Augmented Application Profiles

### AUG-GEN-CD

**With no private Siemens Non-Images stored on the Medium, the definitions of the PRI-SYNGO-CD Profile are applicable to denote the augmentations for the STD-GEN-CD Standard Profile.**

The storage of Private Information Objects is only supported with reference to a Private Application Profile (see next section).

The Siemens non-image is typically used for raw data and 3D private data.

### AUG-CTMR-xxxx

**With no private Siemens Non-Images stored on the Medium, the definitions of the PRI-SYNGO-CD Profile are applicable to denote the augmentations for the and STD-CTMR-CD Standard Profiles.**

The storage of Private Information Objects is only supported with reference to a Private Application Profile (see next section).

### AUG-XA1K-CD

**With no private Siemens Non-Images stored on the Medium, the definitions of the PRI-SYNGO-CD Profile are applicable to denote the augmentations for the STD-XA1K-CD Standard Profile.**

The storage of Private Information Objects is only supported with reference to a Private Application Profile (see next section).

## *syngo*® private offline Media Application Profile

This section contains a syngo-specific Application Profile.

The Structure of this Application Profile is defined in Part 11 of the 2000 DICOM Standard.

It is needed to describe the requirements for Offline Media Storage of the private IOD (Non-Image IOD).

## Class and Profile Identification

This document defines an Application Profile class for "*syngo*® speaking[1]" modalities or applications.

The identifier for this class shall be PRI-SYNGO. This class is intended to be used for the interchange of extended and private Information Objects via CD-R offline media between dedicated acquisition or workstation modalities built from a common *syngo* architecture.

The specific application profiles in this class are shown in the table below:

| Application Profile | Identifier | Description |
|---|---|---|
| "*syngo* speaking" System on CD-R | PRI-SYNGO-CD | Handles interchange of Composite SOP Instances and privately defined SOP Instances (Siemens Non-Image IOD) |
| "*syngo* speaking" System on DVD R | PRI-SYNGO-DVD | Handles interchange of Composite SOP Instances and privately defined SOP Instances (Siemens Non-Image IOD) |

Equipment claiming conformance with this syngo Application Profile Class shall make a clear statement on the handling of the private defined SOP Instances.

1. *syngo* is a registered trademark of Siemens Healthcare GmbH

### Clinical Context

This application profile facilitates the interchange of original acquired and derived images and private data related to them. A typical media interchange would be from in-lab acquisition equipment to dedicated workstations and archive systems with specific extensions to handle the private data objects (in both directions).

Additionally, images used to prepare procedures, multi-modality images (for example, integrated US) and images derived from primary diagnostic images, such as annotations, quantitative analysis images, reference images, and screen capture images, may be interchanged via this profile.

### Roles and Service Class Options

This Application Profile uses the Media Storage Service Class defined in PS 3.4 with the Interchange Option.

The Application Entity supports one or more of the roles of File Set Creator (FSC), File Set Reader (FSR), and File Set Updater (FSU), defined in PS3.10.

#### File Set Creator

The Application Entity acting as File Set Creator generates a File Set under the PRI-SYNGO Application Profiles.

File Set Creators are able to generate the Basic Directory SOP Class in the DICOMDIR file with all the subsidiary Directory Records related to the Image SOP Classes and Private SOP Classes stored in the File Set.

In the case of the PRI-SYNGO-CD and PRI-SYNGO-DVD profile, the FSC offers the ability to allow multi-session (additional information may be subsequently added to the disc). For both profiles, multi-session media can be finalized.

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! A multiple volume (a logical volume that can cross multiple physical media) is not supported by this Application Profile Class. If a set of Files, for example, a Study, cannot be written entirely on one CD-R, the FSC creates multiple independent DICOM File Sets such that each File Set can reside on a single CD-R medium controlled by its individual DICOMDIR file. The user of the FSC can opt to use written labels on the discs to reflect that there is more than one disc for this set of files (for example, a study).

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#### File Set Reader

The role of the File Set Reader is used by Application Entities that receive the transferred File Set.

File Set Readers are able to read all the defined SOP Instance file defined for the specific Application Profiles to which a conformance claim is made, using all the defined Transfer Syntaxes.

*File Set Updater*

The role of the File Set Updater is used by Application Entities, that receive a transferred File Set and update it by adding processed information.

File Set Updaters are able to read and update the DICOMDIR file. File Set Updaters do not have to read the image/private information objects. File Set Updaters are able to generate any of the SOP Instance files defined for the specific Application Profiles to which a conformance claim is made, and to read and update the DICOMDIR file.

In the case of the PRI-SYNGO-CD and PRI-SYNGO-DVD profile, the FSU offers the ability to allow multi-session (additional information can be subsequently added to the disc).

**(for CD-R and DVD-R)**

If the disc has not been finalized, the File Set Updater is able to update information assuming there is enough space on the disc to write a new DICOMDIR file, the information, and the fundamental CD-R/DVD-R control structures. CD-R/DVD-R control structures are the structures inherent to CD-R/DVD-R standards, see PS 3.12.

## PRI-SYNGO Profiles

### SOP Classes and Transfer Syntaxes

These Application Profiles are based on the Media Storage Service Class with the Interchange Option. In the table below, the Transfer Syntax UID "RLE Lossless" applies ony for decompression.

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| Basic Directory | 1.2.840.10008.1.3.10 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | M |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| DX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| DX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | JPEG Lossy (baseline or extend-ed) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | JPEG Lossless 1.2.840.10008.1.2.90 | O | O | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | JPEG Lossy 1.2.840.10008.1.2.91 | O | O | O |
| MG Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | JPEG Lossy (baseline or extend-ed) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| MG Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | JPEG Lossy (baseline or extend-ed) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | JPEG Lossless 1.2.840.10008.1.2.90 | O | O | O |
| IOX Image - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | JPEG Lossy 1.2.840.10008.1.2.91 | O | O | O |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| IOX Image - For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| CT Image<br>Enhanced CT Image | 1.2.840.10008.5.1.4.1.1.2<br>1.2.840.10008.5.1.4.1.1.2.1 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | - | M | - |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | RLE Lossless 1.2.840.10008.1.2.5 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | - | M | - |
| US-MF image (retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | - | M | - |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| US-MF image | 1.2.840.10008.5.1.4.1.1.3.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | M | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | JPEG Lossless Process 14 (selection value 1)<br>1.2.840.10008.1.2.4.70 | O | M | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | JPEG Lossless Process 14 NON-HIER<br>1.2.840.10008.1.2.4.57 | - | M | - |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | Explicit VR Big Endian Uncompressed<br>1.2.840.10008.1.2.2 | O | M | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | JPEG Lossy (baseline or extended)<br>1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | O | O | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | RLE Lossless<br>1.2.840.10008.1.2.5 | O | O | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | JPEG 2000 Lossless<br>1.2.840.10008.1.2.90 | O | O | O |
| MR Image<br>Enhanced MR Image | 1.2.840.10008.5.1.4.1.1.4<br>1.2.840.10008.5.1.4.1.1.4.1 | JPEG 2000 Lossy<br>1.2.840.10008.1.2.90 | O | O | O |
| MR Spectroscopy Image | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Little Endian Uncompressed<br>1.2.840.10008.1.2.1 | M | M | O |
| MR Spectroscopy Image | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Big Endian Uncompressed<br>1.2.840.10008.1.2.2 | O | M | O |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Little Endian Uncompressed<br>1.2.840.10008.1.2.1 | M | M | O |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.4.2 | Explicit VR Big Endian Uncompressed<br>1.2.840.10008.1.2.2 | O | M | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Little Endian Uncompressed<br>1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | - | M | - |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Lossy (baseline or extended)<br>1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | RLE Lossless<br>1.2.840.10008.1.2.5 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG 2000 Lossless<br>1.2.840.10008.1.2.90 | - | M | - |
| US Image (retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG 2000 Lossy<br>1.2.840.10008.1.2.91 | - | M | - |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Little Endian Uncompressed<br>1.2.840.10008.1.2.1 | M | M | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Lossless Process 14 (selection value 1)<br>1.2.840.10008.1.2.4.70 | O | M | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Lossless Process 14 NON-HIER<br>1.2.840.10008.1.2.4.57 | - | M | - |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Big Endian Uncompressed<br>1.2.840.10008.1.2.2 | O | M | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Lossy (baseline or extended)<br>1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | O | O | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | RLE Lossless<br>1.2.840.10008.1.2.5 | O | M | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG 2000 Lossless<br>1.2.840.10008.1.2.90 | O | M | O |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG 2000 Lossy<br>1.2.840.10008.1.2.91 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Little Endian Un-compressed 1.2.840.10008.1.2.1 | M | M | O |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | | | | |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | | | | |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | | | | |
| Multi-frame Single Bit SC Image | 1.2.840.10008.5.1.4.1.1.7.1 | | | | |
| Multi-frame Grayscale Byte SC Image | 1.2.840.10008.5.1.4.1.1.7.2 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| Multi-frame Grayscale Worde SC Image | 1.2.840.10008.5.1.4.1.1.7.3 | | | | |
| Multi-frame True Color SC Image | 1.2.840.10008.5.1.4.1.1.7.4 | | | | |
| Waveform Storage SOP Classes | 1.2.840.10008.5.1.4.1.1.9.1.1<br>1.2.840.10008.5.1.4.1.1.9.1.2<br>1.2.840.10008.5.1.4.1.1.9.1.3<br>1.2.840.10008.5.1.4.1.1.9.2.1<br>1.2.840.10008.5.1.4.1.1.9.3.1<br>1.2.840.10008.5.1.4.1.1.9.4.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| Waveform Storage SOP Classes | 1.2.840.10008.5.1.4.1.1.9.1.1<br>1.2.840.10008.5.1.4.1.1.9.1.2<br>1.2.840.10008.5.1.4.1.1.9.1.3<br>1.2.840.10008.5.1.4.1.1.9.2.1<br>1.2.840.10008.5.1.4.1.1.9.3.1<br>1.2.840.10008.5.1.4.1.1.9.4.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.1 | O | M | O |
| Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.1 | O | M | O |
| Spatial Fiducials Storage | 1.2.840.10008.5.1.4.1.1.66.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Spatial Fiducials Storage | 1.2.840.10008.5.1.4.1.1.66.2 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.1 | O | M | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | O | O | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | M | O |
| X-Ray Angiographic Image | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | O | O | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | RLE Lossless 1.2.840.10008.1.2.5 | O | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | M | O |
| X-Ray Radio-flouroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | JPEG 2000 Lossless 1.2.840.10008.1.2.91 | O | M | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50<br>1.2.840.10008.1.2.4.51 | O | O | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | JPEG 2000 Lossless 1.2.840.10008.1.2.91 | O | O | O |
| Basic Text SR | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Basic Text SR | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Enhanced SR | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Comprehensive SR | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Mammography CAD SR | 1.2.840.10008.5.1.4.1.1.88.50 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Key Object Selection Document | 1.2.840.10008.5.1.4.1.1.88.59 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Chest CAD SR | 1.2.840.10008.5.1.4.1.1.88.65 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| Procedure Log | 1.2.840.10008.5.1.4.1.1.88.40 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| PET Image | 1.2.840.10008.5.1.4.1.1.128 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70 | O | M | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | JPEG Lossless Process 14 NON-HIER 1.2.840.10008.1.2.4.57 | - | M | - |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 | O | O | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | RLE Lossless 1.2.840.10008.1.2.5 | O | O | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | JPEG 2000 Lossless 1.2.840.10008.1.2.90 | O | O | O |
| RT Image | 1.2.840.10008.5.1.4.1.1.481.1 | JPEG 2000 Lossy 1.2.840.10008.1.2.91 | O | O | O |
| RT Dose | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| RT Dose | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Structure Set | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Structure Set | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.4 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.4 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Plan | 1.2.840.10008.5.1.4.1.1.481.5 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Plan | 1.2.840.10008.5.1.4.1.1.481.5 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Brachy Treatment Record | 1.2.840.10008.5.1.4.1.1.481.6 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Brachy Treatment Record | 1.2.840.10008.5.1.4.1.1.481.6 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Treatment Summary Record | 1.2.840.10008.5.1.4.1.1.481.7 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Treatment Summary Record | 1.2.840.10008.5.1.4.1.1.481.7 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Ion Plan | 1.2.840.10008.5.1.4.1.1.481.8 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |

SOP Classes and Transfer Syntax

| Information Object Definitions | SOP Class UID | Transfer Syntax and UID | FSC | FSR | FSU |
|---|---|---|---|---|---|
| RT Ion Plan | 1.2.840.10008.5.1.4.1.1.481.8 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| RT Ion Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.9 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | M | M | O |
| RT Ion Beams Treatment Record | 1.2.840.10008.5.1.4.1.1.481.9 | Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2 | O | M | O |
| Csa Non-Image | 1.3.12.2.1107.5.9.1 | Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1 | O | M | O |

**FSC, FSR, FSU - denote the requirements for these roles**

O - Optional

M - Mandatory

### *Physical Media and Formats*

The PRI-SYNGO-CD Profile requires the use of 120 mm CD-R physical media with the ISO/IEC 9660 Media Format, as defined in PS3.12.

The PRI-SYNGO-DVD Profile requires the use of 120 mm DVD-R physical media with the UDF 2.01 Media Format, as defined in PS3.12.

### *Directory Information in DICOMDIR*

Conforming Application Entities include in the DICOMDIR File the Basic Directory IOD, containing Directory Records at the Patient and subsidiary levels appropriate to the SOP Classes in the File Set. All DICOM files in the File Set incorporating SOP instances defined for the specific Application Profile are referenced by Directory Records.

! DICOMDIRs with no directory information are not allowed by this Application Profile.

Privately defined IODs are referenced by "PRIVATE" Directory Records.

#### *Basic Directory IOD Specification*

This Application Profile makes use of optional attributes of the Basic Directory IOD to support recognition of the Patient's Storage Service request results in spanning multiple volumes (file sets). Therefore, the File Set Descriptor File can be used and

is then referenced by optional Basic Directory IOD attributes. If this exists, the specified Descriptor File may be used by FSR applications. Any FSU or FSC shall make a clear statement if the Descriptor File mechanism is used according to the specialization defined in this Application Profile.

The Descriptor Files has the following contents:

One single line without any control characters and according to the Basic Character Set having the following defined text:

"MULTIVOLUME: xx of yy"

xx, yy are replaced by the actual number of the volume (xx) and the total number of volumes in the set (yy).

If used, the Descriptor File has "README" as its File ID and resides in the same directory level as the DICOMDIR. It is referenced by the attribute [0004,1141] File Set Descriptor File ID having the defined contents of "README".

### *Additional Keys*

File Set Creators and Updaters are required to generate the mandatory elements specified in PS 3.3, Annex F of the DICOM Standard. Table below: PRI-SYNGO-CD Additional DICOMDIR Keys specifies the additional associated keys. Other additional data elements can be added at each directory record level, but it is not required that File Set Readers be able to use them as keys. Refer to the Basic Directory IOD in PS 3.3.

DICOMDIR keys

| Attribute Name | Tag | Directory Record Level | Type | Notes |
|---|---|---|---|---|
| Date Of Birth | (0010,0030) | PATIENT | 2C | Required, if present in SOP Instance |
| Patient's Sex | (0010,0040) | PATIENT | 2C | Required, if present in SOP Instance |
| Series Date | (0008,0021) | SERIES | 3 | |
| Series Time | (0008,0031) | SERIES | 3 | |
| Institution Name | (0008,0080) | SERIES | 2C | Required, if present in SOP Instance |
| Institution Address | (0008,0081) | SERIES | 2C | Required, if present in SOP Instance |
| Series Description | (0008,103E) | SERIES | 3 | |
| Performing Physician's Name | (0008,1050) | SERIES | 2C | Required, if present in SOP Instance |
| Image Type | (0008,0008) | IMAGE | 1C | Required, if present in SOP Instance |
| SOP Class UID | (0008,0016) | IMAGE | 3 | |
| SOP Instance UID | (0008,0018) | IMAGE | 3 | |
| Image Date | (0008,0023) | IMAGE | 3 | |

DICOMDIR keys

| Attribute Name | Tag | Directory Record Level | Type | Notes |
|---|---|---|---|---|
| Image Time | (0008,0033) | IMAGE | 3 | |
| Referenced Image Sequence | (0008,1140) | IMAGE | 1C | Required, if present in SOP Instance |
| > Referenced SOP Class UID | (0008,1150) | | | |
| > Referenced SOP Instance UID | (0008,1155) | | | |
| Image Position (Patient) | (00020,0032) | IMAGE | 2C | Required, if present in SOP Instance |
| Image Orientation (Patient) | (0020,0037) | IMAGE | 2C | Required, if present in SOP Instance |
| Frame Of Reference UID | (0020,0052) | IMAGE | 2C | Required, if present in SOP Instance |
| Rows | (0028,0010) | IMAGE | 3 | |
| Columns | (0028,0011) | IMAGE | 3 | |
| Pixel Spacing | (0028,0030) | IMAGE | 1C | C |
| Calibration Image | (0050,0004) | IMAGE | 2C | Required, if present in SOP Instance |
| Icon Image Sequence | (0088,0200) | IMAGE | 3 | Required for Image SOP Classes |
| > Samples per Pixel | (0028,0002) | | | 1 |
| > Photometric Interpretation | (0028,0004) | | | MONOCHROME2 |
| > Rows | (0028,0010) | | | 128 for XA IOD, 64 otherwise |
| > Columns | (0028,0011) | | | 128 for XA IOD, 64 otherwise |
| > Bits Allocated | (0028,0100) | | | 8 |
| > Bits Stored | (0028,0101) | | | 8 |
| > High Bit | (0028,0102) | | | 7 |
| > Pixel Representation | (0028,0103) | | | 0 (unsigned) |
| > Pixel Data | (7FE0,0010) | | | Icon Image pixel data |
| Curve Number | (0020,0024) | CURVE | 1C | required, if present in SOP Instance |

### *Private Directory Record Keys*

Private Directory Records are supported by this Application Profile Class at the following level:

IMAGE

The PRIVATE Directory Records have other required elements in addition to the mandatory elements specified in PS 3.3.

The following table lists the additionally required keys for PRIVATE Directory Records.

DICOMDIR keys for CsaNonImage

| Attribute Name | Tag | Directory Record Level | Type | Notes |
|---|---|---|---|---|
| Private Record UID | (0004,1432) | PRIVATE | 1 | See Conformance Statement |
| SOP Class UID | (0008,0016) | PRIVATE | 1C | Required, if present in SOP Instance |
| SOP Instance UID | (0008,0018) | PRIVATE | 1C | Required, if present in SOP Instance |
| Image Type | (0008,0008) | PRIVATE | 3 | Identification characteristics |
| Acquisition Date | (0008,0022) | PRIVATE | 3 | |
| Acquisition Time | (0008,0032) | PRIVATE | 3 | |
| Acquisition Number | (0020,0012) | PRIVATE | 3 | |
| CSA Data Type | (0029,xx08) | PRIVATE | 1 | Private owner code = SIEMENS CSA NON-IMAGE |
| CSA Data Version | (0029,xx09) | PRIVATE | 3 | Private owner code = SIEMENS CSA NON-IMAGE |

#### *Icon Images*

Directory Records of type SERIES or IMAGE may include Icon Images. The Icon Image Pixel data is as specified in PS 3.3 "Icon Imge Key Definition", and restricted such that Bits Allocated (0028,0100) and Bits Stored (0028,0101) are equal to 8, and Rows (0028,0010) and Columns (0028, 0011) are equal to 128 for XA Images and 64 for all other images. The Photometric interpretation (0028,0004) is always restricted to "MONOCHROME2".

PRIVATE Directory Records will not contain Icon Image information.

### *Other Parameters*

This section defines other parameters common to all specific Application Profiles in the PRI-SYNGO class that need to be specified in order to ensure interoperable media interchange.

#### *Multiframe JPEG Format*

The JPEG encoding of pixel data uses the Interchange Format (with table specification) for all frames.

# Extentions, Specializations and Privatizations of SOP Classes and Transfer Syntaxes

The SOP Classes listed mainly refer to those created by the equipment to which this Conformance Statement is related. For SOP classes not listed in this section, please refer to the Storage section of the DICOM Conformance Statement of the product. This includes all SOP Instances that can be received and displayed, and therefore will be included in offline media storage even though these SOP Instances are not created by the equipment serving the Media Storage Service.

# SOP-Specific Conformance Statement for Basic Directory

## Extension, Specialization for SIEMENS Non-Image Objects

According to the PRI-SYNGO Application Profile Class, the use of the Private Creator UIDs and further optional keys for the Directory Records referring to SIEMENS Non-Image Objects is given in the following table.

| Attribute | Tag | Value used |
|---|---|---|
| Private Record UID | (0004,1432) | 1.3.12.2.1107.5.9.1 |
| SOP Class UID | (0008,0016) | 1.3.12.2.1107.5.9.1 |

For the Non-Images no Icon Image Sequence is generated.

# *Extentions, Specializations and Privatizations*

# Configuration

## AE Title Mapping

### DICOM Media Storage AE Title

The DICOM Storage application (Image Manager) provides the application entity title:

- CsaImageManager

# Configuration

# DICOM Conformance Statement

The Somaris/7 DICOM application supports the following character sets as defined in the four tables below:

Single-Byte Character Sets without Code Extenension

| Character Set Description | Defined Term | ISO Registration Number | Character Set |
|---|---|---|---|
| Default repertoire | NoneNone | ISO_IR 6 | ISO 646 |
| Latin alphabet No. 1 | ISO_IR 100 | ISO_IR 100 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet No. 2 | ISO_IR 101 | ISO_IR 101 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet No. 3 | ISO_IR 109 | ISO_IR 109 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet No. 4 | ISO_IR 110 | ISO_IR 110 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Cyrillic | ISO_IR 144 | ISO_IR 144 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Arabic | ISO_IR 127 | ISO_IR 127 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Greek | ISO_IR 126 | ISO_IR 126 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Hebrew | ISO_IR 138 | ISO_IR 138 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Latin alphabet No. 5 | ISO_IR 148 | ISO_IR 148 | Supplementary set |
| | | ISO_IR 6 | ISO 646 |
| Japanese | ISO_IR 13 | ISO_IR 13 | JIS X 0201:Katakana |
| | | ISO_IR 14 | JIS X 0201:Romaji |

Single-Byte Character Sets with Code Extenension

| Character Set Description | Defined Term | Standart for Code Extension | ESC Sequence | ISO Registration Number | Character Set |
|---|---|---|---|---|---|
| Default repertoire | ISO 2022 IR 6 | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet No.1 | ISO 2022 IR 100 | ISO 2022 | ESC 02/13 04/01 | ISO_IR 100 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet No.2 | ISO 2022 IR 101 | ISO 2022 | ESC 02/13 04/02 | ISO_IR 101 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet No.3 | ISO 2022 IR 109 | ISO 2022 | ESC 02/13 04/03 | ISO_IR 109 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet No.4 | ISO 2022 IR 110 | ISO 2022 | ESC 02/13 04/04 | ISO_IR 110 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Cyrillic | ISO 2022 IR 144 | ISO 2022 | ESC 02/13 04/12 | ISO_IR 144 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Arabic | ISO 2022 IR 127 | ISO 2022 | ESC 02/13 04/07 | ISO_IR 127 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Greek | ISO 2022 IR 126 | ISO 2022 | ESC 02/13 04/06 | ISO_IR 126 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Hebrew | ISO 2022 IR 138 | ISO 2022 | ESC 02/13 04/08 | ISO_IR 138 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Latin alphabet No.5 | ISO 2022 IR 148 | ISO 2022 | ESC 02/13 04/13 | ISO_IR 148 | Supplementary set |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 6 | ISO 646 |
| Japanese | ISO 2022 IR 13 | ISO 2022 | ESC 02/13 04/09 | ISO_IR 13 | JIS X 0201:Kataka-na |
| | | ISO 2022 | ESC 02/08 04/02 | ISO_IR 14 | JIS X 0201-1976:Romaji |

Multi-Byte Character Sets without Code Extension

| Character Set Description | Defined Term | ISO Registration Number | Character Set |
|---|---|---|---|
| Unicode | ISO_IR 192 | ISO 10646 | Unicode in UTF-8 |
| Chinese | GB18030 | GB18030 | GB 18030-2000 (China Association for Standardization) |

Multi-Byte Character Sets with Code Extension

| Character Set Description | Defined Term | Standart for Code Extension | ESC Sequence | ISO Registration Number | Character Set |
|---|---|---|---|---|---|
| Japanese | ISO 2022 IR 87 | ISO 2022 | ESC 02/04 04/02 | ISO_IR 87 | JIS X 0208: Kanji |
| | ISO 2022 IR 159 | ISO 2022 | ESC 02/04 02/08 04/04 | ISO_IR 159 | JIS X 2012: Supplementary Kanji set |
| Chinese[a] | ISO 2022 IR 58 | ISO 2022 | ESC 02/04 04/01 | ISO_IR 58 | GB2312-80 (China Association for Standardization) |

[a.] This Character Set is an extension of DICOM for the Chinese language.

When there is a mismatch between the SCS tags (0008,0005) and the characters in an IOD coming into the system, then the following measures are taken to make the characters DICOM-conform:

- Try to import with ISO-IR 100. If ISO-IR 100 also fails, convert each illegal character to '?'.

There are now 3 categories of character sets which have to be differentiated because of their different encoding formats:

- Conventional ISO character sets: ISO_IR 6, ISO 2022 IR 6, ISO_IR 100, etc. =>Encoded in ISO 2022
- ISO_IR 192: Encoded in UTF-8
- GB18030: Encoded in GB18030

It is not possible to recognize the following mismatches automatically on receiving or importing:

- An attribute value is encoded in ISO_IR 192 <=> (0008,0005) contains a conventional ISO character set as the primary character set
- An attribute value is encoded in GB18030 <=> (0008,0005) contains a conventional ISO character set as the primary character set
- An attribute value is encoded in ISO 2022 <=> (0008,0005) contains ISO_IR 192
- An attribute value is encoded in ISO 2022 <=> (0008,0005) contains GB18030

An IOD that contains one of the above mentioned inconsistencies is not DICOM-conform. As these kinds of inconsistencies cannot be recognized by the system, the IOD is not rejected, but the character data might be corrupted.

Older versions of syngo do not support the newly introduced character sets ISO_IR 192 and GB18030, and their special encodings. This means that an IOD which contains one of these new character sets in (0008,0005) will be rejected by an older syngo system.

# Annex

## Siemens Private Non-Image IOD

Please see *Private SOP class CSA Non-Image* →A3-46.

## Siemens Standard Extended Modules

Please see *All syngo-Supported Image SOP Classes* →A3-35.

## Siemens Standard Extended Modules

Please see *Registry of DICOM Data Elements* →A3-33 and *Registry of DICOM Data Elements* →A3-43.

## Standard Extensions of all SOP Classes

Please see *Standard Extensions of all SOP Classes* →A3-1.

## DICOM Print SCU - detailed status displays

Please see *DICOM Print SCU - detailed status displays* →A2-90.

# Annex

# DICOM Conformance Statement


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Basic Worklist A2-102
Body Part Examined A3-8, A3-26

## C

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